DOCUMENT RESUME

ED 278 822 CE 046 352

TITLE	Keepers of the Land. An Agricultural Curriculum for Kindergarten-Sixth Grade.
INSTITUTION	South Carolina State Dept. of Education, Columbia. Office of General Education.
PUB DATE	[86]
NOTE	257p.; Document is printed on colored paper.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC11 Plus Postage.
DESCRIPTORS	Agricultural Education; *Agriculture; Behavioral Objectives; Classroom Techniques; Elementary Education; *Farmers; Farm Management; *Integrated Curriculum; *Learning Activities; Lesson Plans; Marketing; *State Programs; Teaching Methods; Transparencies; Units of Study
IDENTIFIERS	*South Carolina

ABSTRACT

This agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through traditional subject areas. Twelve units are provided for each grade level K-6. Each unit is correlated to one or more instructional areas: art, career education, environmental education, health, mathematics, music, language arts, physical education, science, and social studies. Each unit also identifies an agricultural concept and a specific objective related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An introduction, a variety of learning activities, and a culminating activity (summary) offer learning experiences for students. Also provided are materials needed and possible resources, including transparency masters. (KC)

****
*   Reproductions supplied by EDRS are the best that can be made   *
*   from the original document.   *
****

ED278822

KEEPERS OF THE LAND
AN AGRICULTURAL CURRICULUM FOR
KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers
and the Curriculum Section
of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

CE046358

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society." **Why Agriculture Is So Important**
Ag in the Classroom
United States Department
of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

S. C. Department of Agriculture
  Dr. Richard H. Jesse
  Peggie L. Davis

Forestry Commission
  Rhett Bickley

Water Resources Commission
  Chris Brooks
  Danny L. Johnson

Clemson Extension Marine Research
  Jack Whetstone

Land Resources Commission
  John W. Parris
  Cary Chamblee
  Charles Logan
  Von Snelgrove

Wildlife and Marine Resources Department
  Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

KINDERGARTEN

TABLE OF CONTENTS

Unit I: Origin: What's on a Farm: Farm Animals
(Auditory stimuli; receptive and expressive language; motor skills)

Unit II: Origin: What's on a Farm: Farm Animals
(Fine motor skills; classifying and comparing; counting)

Unit III: Origin: What's on a Farm: Farm and "Zoo" Animals
(Comparing and classifying; visual stimuli; language extension; fine motor skills)

Unit IV: Managing a Farm: Growing Plants
(Comparing visual stimuli; receptive and expressive language)

Unit V: Origin: Where Foods Come From: Animals or Plants
(Comparison; language extension and expression; inference and interpretation)

Unit VI: Managing a Farm: Daily Life
(Expressive language; fine/gross motor skills)

Unit VII: Marketing: How Food Comes to the Table: Fruits and Vegetables
(Fine motor skills; counting; likenesses/differences)

Unit VIII: Origin: Where Food Comes From: Peanuts
Marketing: Changing Products for Market: Peanuts
(Classifying; receptive and expressive language; likenesses and differences in visual stimuli; sequencing)

Unit IX: Need: Food from Row Crops: Corn
(Inference; classifying visual stimuli; discriminating auditory stimuli; fine motor skills)

Unit X: Origin: What's in a Forest: Animals
(Comparing and contrasting visual stimuli; gross/fine motor skills; expressive language)

Unit XI: Origin: What's in a Forest: Animals, Plants
(Remembering visual and auditory stimuli; expressive language; fine motor skills)

Unit XII: Origin: What's in Water: Animals
(Expressive language; comparing likenesses and differences; fine motor skills)

NOTE: **An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6). A brief resource list of manipulatives and teacher references is included with the Kindergarten activities.**

ILLUSTRATIONS INCLUDED

K-1	Individual farm animals
K-2	Farm females and young
K-3	Individual farm animals and individual zoo animals
K-9	Corn plants and ear
K-10	Forest scene
K-12	Seashore transparencies from illustrations

See Resource List in library/media center for additional audiovisual resources.

Grade K

Unit 1

KEEPERS OF THE LAND

Instructional Area: Auditory stimuli
Receptive language
Expressive language
Motor skills

Agricultural Concept: Origins: What's on a Farm - Farm Animals

Objective: Students will learn about farm animals.

Introduction: Using illustrations, let students identify farm animals.

Activities:

1. Initiate conversation about pictures of farms. Introduce words such as dairy farm, poultry farm, barn, stable, trough, field, pasture, tractor, farmer as appropriate.

2. Let students individually make an animal sound (moo, baa) and let others guess what animal it is. Help students make sounds as real as possible; records of actual animal sounds may be useful.

3. With the children, act out animal movements and sounds. (Chickens flap wings and cluck; horses gallop and neigh; dogs run and bark; ducks waddle and quack.)

4. Teach students animal-related nursery rhymes and folk songs ("Baa Baa Black Sheep"; "Mary Had a Little Lamb"; "Old McDonald"; "Bingo"; "Little Boy Blue"; "Little Bo-Peep"; "Goosey, Goosey Gander.")

5. Language experience - Have children finish the sentence(s): "If I were a cow, I would....; If I lived on a farm, I would....; If I were a farmer, I would....".

6. Make paper-bag puppets of farm animals and act out the animals.

Culminating Activity: Read to children a book about farm animals such as the Country Noisy Book by Margaret Brown or Wake up Farm by Alvin Tresselt. (See Resource List for others.)

Materials: Farm pictures (illustrations, commercial teaching pictures, farm journals)
Nursery rhymes and folk songs

Grade K

Unit 2

KEEPERS OF THE LAND

Instructional Area:

Fine motor skills
Classifying and comparing
Counting

Agricultural Concept: Origin of Food: What's on a Farm?

Objective: Students learn more about farm animals and their young.

Introduction: Ask students who they look like - their mother or their father. What is "alike" (eyes, face, hair, etc). Animal young look like their parents, too.

Activities:

1. Show farm female and baby illustrations. What is "alike"? Let students name animals. See who knows right names for young. Male names may be added, too, as might additional animals as desired.

2. Count and compare the legs of different farm animals. Ask how many legs do cows have? horses? chickens? ducks? turkeys? pigs? sheep? geese? etc. Which animals have hair? Which have feathers?

3. Counting Animals: Teacher provides small plastic/rubber animals and square-shaped fences made from popsicle sticks or small fruit baskets. Each fence is labeled with a number (1-5). Child counts out correct number of animals to place inside of fence.

4. Children use felt geometric shapes on flannel board to create a farm animal.

Culminating Activity: Students match adults with their young in a self-checking game.

Materials:

Illustrations and additional pictures as desired
Small plastic or rubber animals
Popsicle sticks / baskets
Geometric felt shapes and flannel board
Cards for matching animal game

Grade K

Unit 3

KEEPERS OF THE LAND

Instructional Area:

Comparing and classifying
Remembers and sequences visual stimuli
Language extension
Fine motor skills

Agricultural Concept: Origin: What's on a Farm?

Objective: Students will learn about farm animals and animals that do not live on farms.

Introduction: Provide wooden animals and animal puzzles for children. (See Kindergarten Resource List.)

Activities:

1. Show pictures of farm animals and zoo animals or wild animals. Then in a learning center or as a group, let children put animal cards "on the farm" or "in the zoo". Children could also sort plastic animals if available.

2. Teacher-made game: Animals can be traced on poster board. On the back of the animal's head, write a number. On the back of the body, draw the same number of dots. Laminate and cut apart. Child is to match numbers to dots. Check by turning over to see if animals are correct.

3. Provide teacher-made or commercial tracing cards of farm animals.

4. Animal Guessing Game. Describe to children a farm or zoo animal. See if they can guess what animal you are describing. Emphasize farm animals.

   Examples: "This animal is big. It has a mane and a long tail. It likes to gallop or trot. It says neigh. What is it?" (A horse).
   "This animal has short legs. It gives us bacon and ham. What is it?" Additional clues - "It squeals a lot." "It says oink." (pig)
   "This animal is very big. It has a long trunk. It has huge ears. It has wrinkled skin." (elephant)

Grade K

Unit 3, cont.

Culminating Activity: Serve animal crackers and milk for a snack. See if children can identify animals, and tell whether they live on a farm.

Materials:

Animal puzzles
Illustrations
Animal crackers and milk

Grade K

Unit 4

KEEPERS OF THE LAND

Instructional Area: Comparing visual stimuli
Receptive and expressive language

Agricultural Concept: Managing a Farm: Growing Plants

Objective: The children will observe how plants grow.

Introduction: Hold up a seed. Ask children if they know what seeds are, what happens to them, etc.

Activities:

1. Show children selected seeds and explain briefly that plants grow from seeds. Identify several common kinds.
2. Use pictures showing plants and plant parts. Discuss what a plant is and the functions of the basic parts (stem, root, leaf, flower).
3. Pull up a plant with established roots and let the children examine it.
4. Read stories about plants (See Resource List.)

Culminating Activity: Grow a plant.

- a. Provide seeds (lima beans), soil, clear plastic cups so children may plant seeds and watch the plant grow. Roots may be observed through the plastic cup.
- b. Cut carrot tops off of carrots. Place in shallow bowl of crushed stones or pebbles covered with water. Watch them grow from day to day.
- c. Cut off the top third of a sweet potato (or it can be left whole) and set it in water, allowing sprouts to develop into a vine.

Watch the plant grow from day to day and talk about the process.

Materials:

Seeds, including lima beans
Plant with root structure
Books about plants
Carrot top(s)
Sweet potato(es)

Grade K

Unit 5

KEEPERS OF THE LAND

Instructional Area:

Comparison
Language extension and expression
Inference and interpretation

Agricultural Concept:

Origin: Where Foods Come From

Objective:

Students will learn which common foods come from a) animals b) plants.

Introduction:

Let students name their favorite foods. Make a list on the board. (Keep to basic foods and not too many.) Next name some least favorite foods.

Activities:

1. Now ask where foods on the board come from, animals or plants. Teach that our food comes from these two sources.

2. Children at a learning center may sort either pictures of food mounted on tagboard or plastic foods into boxes illustrated with pictures of plants or animals.

3. Next discuss which animals or what kind of plants ("big plant", "little plant", tree, etc.) certain foods come from. Use riddles such as these to introduce food sources:

   "I am round. I grow on a tree.
   Sometimes I am red. I am juicy.
   Sometimes they make juice or sauce out of me." (Apple)

   "I am long and orange. I'm good for your eyes. Boys and girls like to eat me raw. I grow underground. I am a root." Additional clue: "Bugs Bunny likes me." (Carrot)

   "I am good to eat on a picnic. My drumstick is your favorite. You like me fried. (Chicken)

Culminating Activity:

Make a classroom recipe book. Each child dictates a "recipe" to the teacher. Ask the child if recipe uses plant or animal foods.

Materials:

Plastic replicas of food or pictures mounted on tag board (See Kindergarten Resource List.)

Grade K

Unit 6

KEEPERS OF THE LAND

Instructional Area: Expressive language
Fine/gross motor skills

Agricultural Concept: Managing a Farm: Daily life

Objective: Children will learn and pantomime tasks that they could do at their age on a farm.

Introduction: Show filmstrips, pictures of cows being milked, animals and their young, farmer driving a tractor. Learn/review oral vocabulary: stable, barn, trough, fence, pasture, field.

Activities:

1. Using pictures and filmstrips, talk about different kinds of farms: dairy, poultry, pig , cattle , horse.

2. In block building center, set out plastic/clay/rubber accessories (farm animals, tractor, farm fences, trees, troughs, people). You may also set out a flannel board with farm animals (commercial or teacher-made) so children can create their own farm scene.

3. With each or any of these "prop" sets, let children talk about farm tasks that a five-year-old could do and those too hard for them to do until they are older. Children could bottle feed a baby calf, but could not drive a tractor. Children also could gather eggs on a small farm, plant seedlings, harvest vegetables from the family garden. Most tasks on modern farms are mechanized.

4. Let students draw a picture of a selected activity they would enjoy doing. Then let volunteers pantomine the task.

5. Let students play "Farmer in the Dell" or a similar activity.

6. Teach children fingerplays appropriate to the farm.

Grade K

Unit 6, cont.

Culminating Activity: Invite a local farmer to school who can tell about his/her farm and answer children's questions about what five-year-olds can do on a farm. Visit a farm if possible.

Materials:

Plastic /clay/rubber farm accessories
(See Resource Lists)
Pictures, filmstrips as available
Flannel board and farm cut-outs
Finger play resource
Farm Bureau/County Extension service
(see local phone book)

Grade K

Unit 7

KEEPERS OF THE LAND

Instructional Area:

Fine motor skills
Counting
Likenesses/differences

Agricultural Concept: Marketing: How Food Comes to the Table

Objective: Children will learn about fruits and vegetables sold fresh in the market.

Introduction: Provide commercially-made wooden puzzles featuring fruits and vegetables or teacher-made puzzles made from cutting up pictures backed with cardboard.

Activities:

1. Play Potato Game: 1 potato, 2 potato, 3 potato 4... to develop counting skills; winners can change "potato" to any fruit or vegetable for next game.
2. Bring in samples of fruits and vegetables. Compare sizes as well as colors (apples, bananas, peaches, pears, tomatoes, potatoes, carrots, onions).
3. Let children match sets of fruits, vegetables, with correct number card (ex., 2) to be placed beside a group of two items. This may also be done as a self-checking learning center.

Culminating Activity: Provide or arrange a "play" grocery store with play money. Mark fruits and vegetables with prices of 1¢, 2¢, 3¢, etc. Children practice pressing numbers on cash register.

Materials:

Wooden puzzles
Plastic or real fruits and vegetables
Number cards
Cash register and play money

Grade K

Unit 8

KEEPERS OF THE LAND

Instructional Area:

Classifying
Receptive/expressive language
Likenesses/differences in visual stimuli
Sequencing

Agricultural Concept:

Origin: Where Food Comes From
Marketing: How Natural Products Are Changed for Market

Objective:

Children will understand that peanut butter comes from peanuts and will discover other uses for peanuts.

Introduction:

Clip several pictures of products from magazines or the newspaper which are made from peanuts. Mix these pictures with others that don't require peanuts. See if children can sort out the pictures which contain peanuts.

Activities:

1. Have the students describe different ways peanuts are prepared (boiled, roasted, etc.) and tell which way they prefer them. Prepare some in class or bring some for tasting. Have students examine the peanuts before and after cooking to distinguish similarities and differences.

2. Talk a few minutes about how peanuts grow (underground, etc.). Show students a plant if possible or a picture. Compare green peanuts with dry roasted peanuts in the shell. To make peanut butter, shell 10 roasted peanuts and drop into a chopper/blender. Turn the crank or blend until the peanuts come out smooth. Then add 1 teaspoon of vegetable oil and mix until smooth.

3. Plant a peanut plant in a pot in April or May and invite the students to come back in late August or September to help dig up the peanuts. (Remember to provide a warm, frost-free climate for the plant.)

Culminating Activity: Ask students to review the steps in making peanut butter and then eat peanut butter sandwiches.

Materials

Pictures from magazines, advertisements
Raw and prepared peanuts
Peanut plant or picture
10 roasted peanuts, 1 teaspoon vegetable oil, food chopper or blender, saucer and plastic knife, bread

Grade K

Unit 9

KEEPERS OF THE LAND

Instructional Area:

Inference
Classifying visual stimuli
Discriminating auditory stimuli
Fine motor skills

Agricultural Concept: Need: Row crops (Corn)

Objective: Students will learn corn is used for food for people and animals.

Introduction: Show an ear of fresh or dried corn and ask what corn is used for. Who eats it? (e.g., people, animals)

Activities:

1. Show pictures of corn plants (See illustrations.) Let children infer which plant is oldest, youngest, etc. Talk about the corn ear and how it grows on the plant. Let children shuck ears if available.

2. Using cooked corn, feed corn, a measuring cup and pan, let children decide how much would be "a serving" for a person, a chicken, a cow, and a hog. Shell some dried corn by hand for the activity.

3. Compare samples of popcorn kernels with corn flakes. Which makes a noise when squeezed? Then pop corn. See who can hear the first kernel pop. Let children make popcorn popping sounds.

4. Cook cornbread. Explain to the students that cornmeal is ground corn.
   Recipe:
      1 cup self-rising meal
      3/4 cup milk
      1 egg
      1 Tbsp. shortening or oil
   Mix lightly. Bake in muffin tins or in skillet. 425° to 450° for 20-30 minutes.

Culminating Activity: Let children draw a picture illustrating what they like best about corn.

Materials:

Illustrations of corn plants
Ear of corn, canned corn, and feed corn
Pan and 1-cup measure
Cornflakes
Popping corn and cornpopper

Grade K

Unit 10

KEEPERS OF THE LAND

Instructional Area: Comparing and contrasting visual stimuli
Gross/fine motor skills
Expressive language

Agricultural Concept: Origin: What's in a Forest

Objective: Students will learn about animals who use the forest as their home.

Introduction: Show picture of forest with animals. See how many animal names children know.

Activities:

1. Talk with children about animals. Are they easy or difficult to see? Why is that? Are they fast or slow? Do they have long or short hair? Which ones are big/little?
2. Compare animal homes. Where does each one live in the forest? Use "Smokey the Bear" to discuss protecting the forest.
3. "Name That Animal" game - Pictures of forest animals are placed in a bag. Child draws one out, then acts out movement of animal, describes covering, what the animal eats, etc. The class then names animal.

Culminating Activity: Let children make forest animals out of clay.

Materials: Illustrations of forest; other pictures of animals
Modeling clay
Forestry Service resources (See Resource List.)

Grade K

Unit 11

KEEPERS OF THE LAND

Instructional Area:

Remembering visual and auditory stimuli
Expressive language
Fine motor skills

Agricultural Concept: Origin: What's in a Forest

Objective: Children become familiar with the Forest.

Set: Let children draw a "group" mural of a forest on the chalkboard. Each child should have one assigned space to fill.

Activities:

1. Take nature walk through the woods. Look at trees. Allow children to collect samples such as pine cones (without damaging the environment, not pulling wildflowers). Place items in science center for children to examine. If woods are not readily available, the teacher can set up a center with real objects and pictures.
2. Do leaf rubbings. Place fresh leaves under a sheet of paper. Rub crayon over paper until leaf pattern appears. Point out shape and vein patterns in leaves. The teacher might also preserve leaves by lightly ironing them between sheets of waxed paper.
3. Make nature collage with items collected on nature walk. Or use nature magazines to show children pictures of different forests.
4. Visit a Christmas tree farm and select a tree for classroom use, if appropriate. Have children illustrate their own tree as an alternative.

Culminating Activity: Discuss the forest with the children; ask them what they have learned. Then let them change whatever they would like to change on their part of the mural.

Materials:

Colored chalk
Leaves
Construction paper
Crayon
Items collected from forest floor (pine cones, leaves, gum balls, etc.).
Glue or other "fix" for collage
Nature magazines

Grade K

Unit 12

KEEPERS OF THE LAND

Instructional Area: Expressive language
Comparing likenesses and differences
Fine motor skills

Agricultural Concept: Origin: What's in Water

Objective: Children will learn about fish and other water animals and how they are different from land animals.

Introduction: Have a goldfish in a bowl. Let students tell what is different about how the fish lives compared to how a dog or cat lives.

Activities:

1. Ask students what kinds of things we eat that live in the water. Using magazine pictures, introduce as needed new vocabulary: fish (catfish), shrimp, clam, lobster, oyster, scallop. Ask how many students have eaten any of these. Tell students there are now some farms where fish (or other animals) are grown. Ask students how a fish farm would be different from a dairy farm or other farm.

2. How many students have ever been fishing? Where? Talk about ponds, lakes, rivers, oceans.

3. Fishing game. Using a magnet and string "pole" and animal shapes of paper with a paper clip, let students "fish". Sea animals are put in a "fishing basket" and land animals in a "barn."

4. Let students make a sea mobile. Use transparencies from illustrations to talk about the sea!

5. Cut the botton half of a hot dog (wiener) into 8 strips. When boiled, the strips will curl. Use cloves for eyes; cut out the mouth with a bottle opener. Encourage discussion about the animal you have made (octopus).

6. Display books about the ocean.

Culminating Activity: If possible, set up an aquarium or have students create a mural with different sea life.

Materials:

Pictures from nature magazines
Goldfish in a bowl
Magnets and string for fishing "poles"
Animal shapes--sea and land--of paper
Construction paper and materials for mobile
Books (See Resource List.)
Transparencies from illustrations

KINDERGARTEN/EARLY GRADES RESOURCES

A variety of kits, puzzles, photographs, posters, stamps, templates, rubber and plastic animals/foods, flannel board cut-outs, lotto/dominoes games are available from producers and school supply houses such as:

Childcraft
Developmental Learning Materials
Lakeshore
Society for Visual Education, Inc.
Stone's School Supply
Constructive Playthings
Judy
Milton Bradley
Bender-Burkot School Supply

TEACHER RESOURCE BOOKS

Band-Aid Therapy. Victoria, Texas: Victoria Public Schools, 1973.

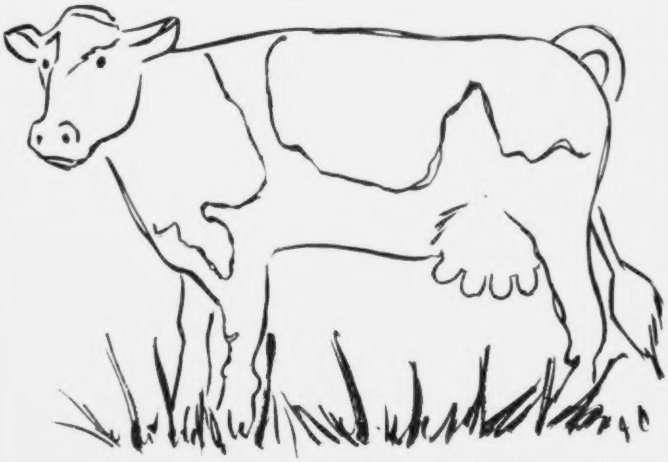
Baratta-Lorton, Mary. *Workjobs*. Atlanta, Georgia: Addison-Wesley, 1972.

Cromell, Liz and Hibner, Dale. *Finger Frolics*. Dixie Partner Press: Livonia, Michigan, 1976.

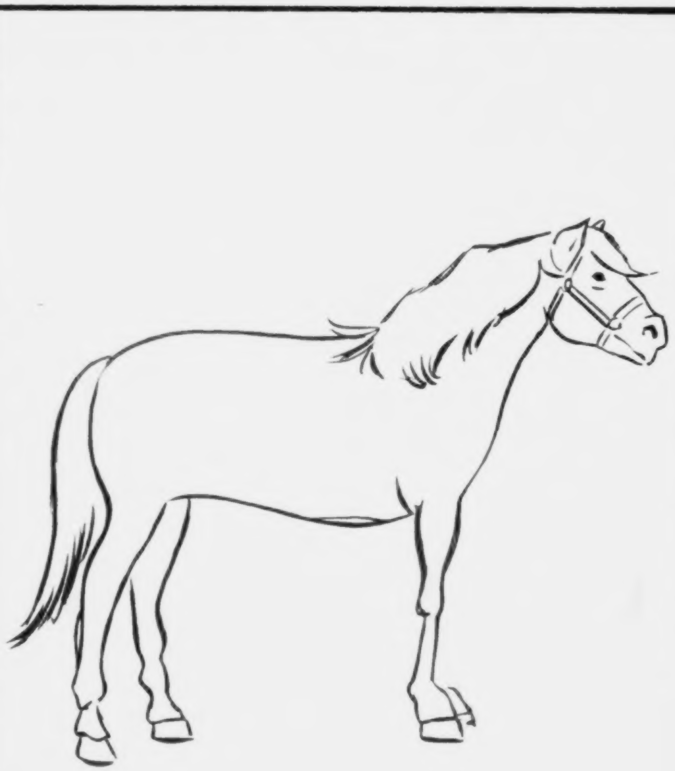
Flemming, Bonnie Mack; Hamilton, Darlene S.; and Hicks, JoAnne D. *Resources for Creative Teaching in Early Childhood Education*. New York: Harcourt Brace Jovanovich, Inc. 1977.

Gronski, Claudette and Judith Meeker. *Power Pak for Preschool Programs*. Nashville, Tennessee: Incentive Publications, 1984.

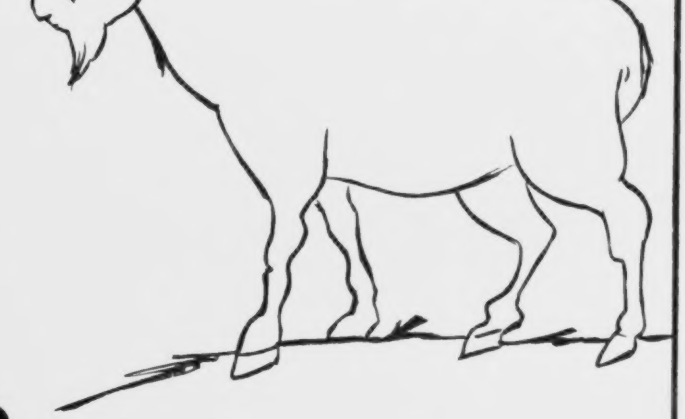
Ring A Ring O'Roses - Stories, Games and Fingerplays for Pre-school Children. Flint, Michigan: Board of Education, 1977.



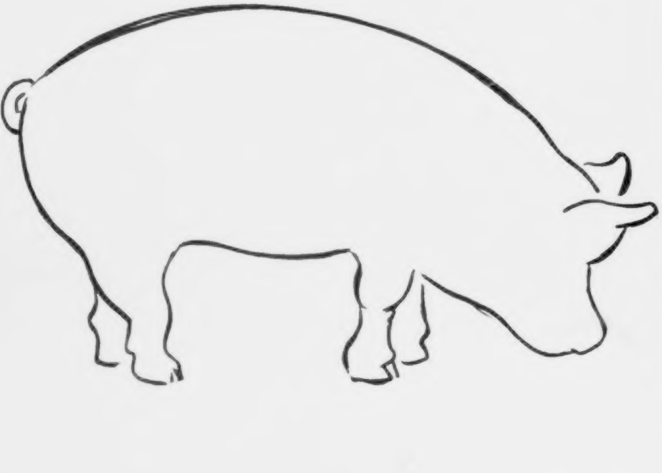
Cow



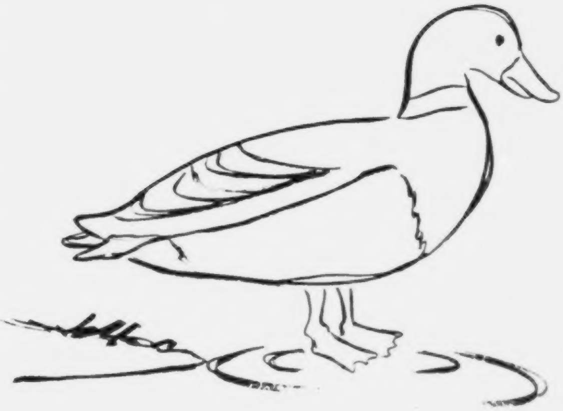
Horse



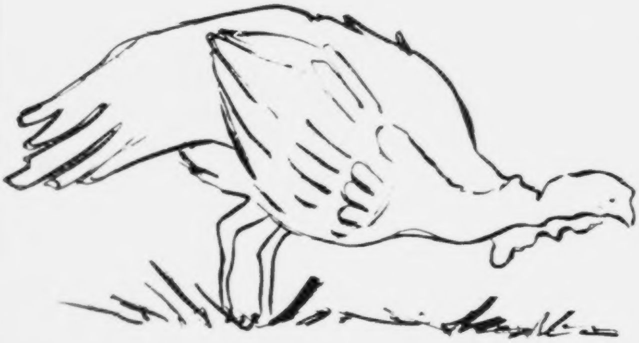
Goat



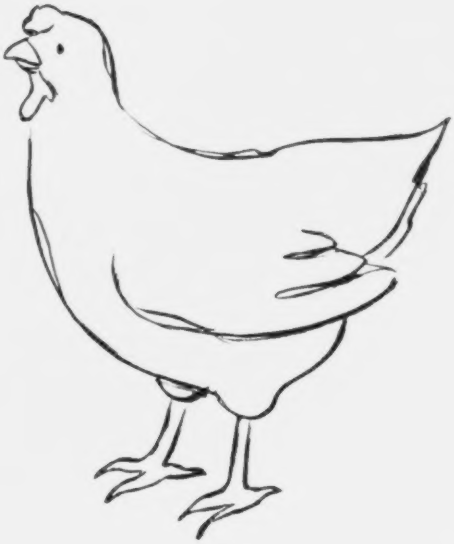
Hog



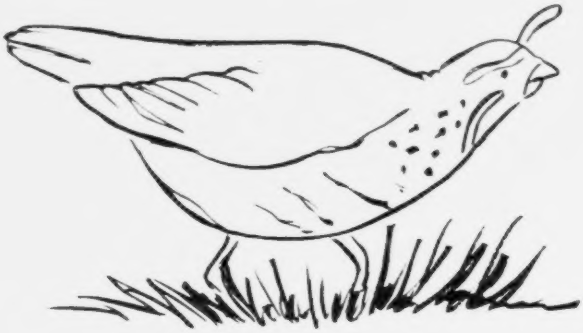
Duck



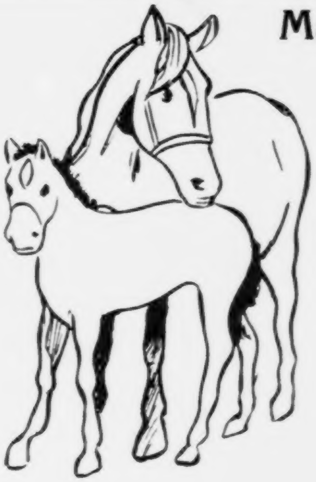
Turkey



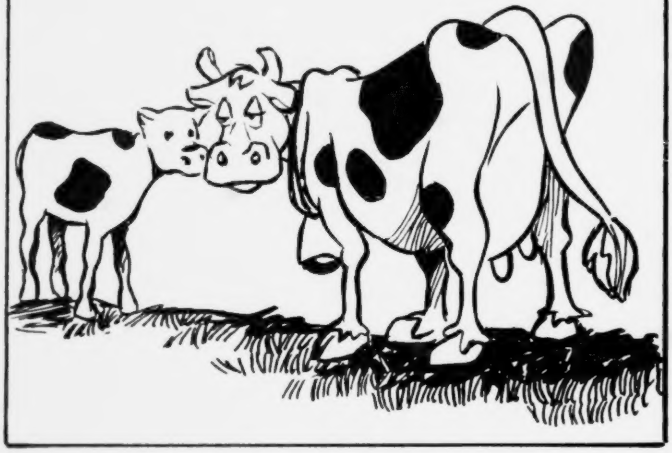
Chicken



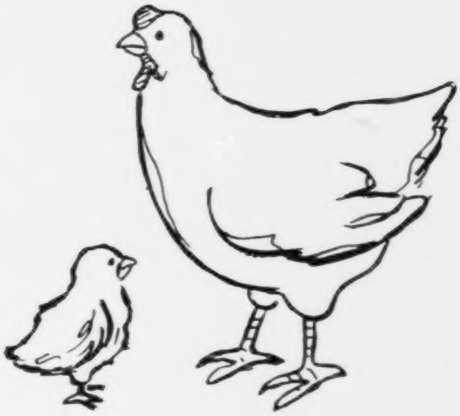
Quail



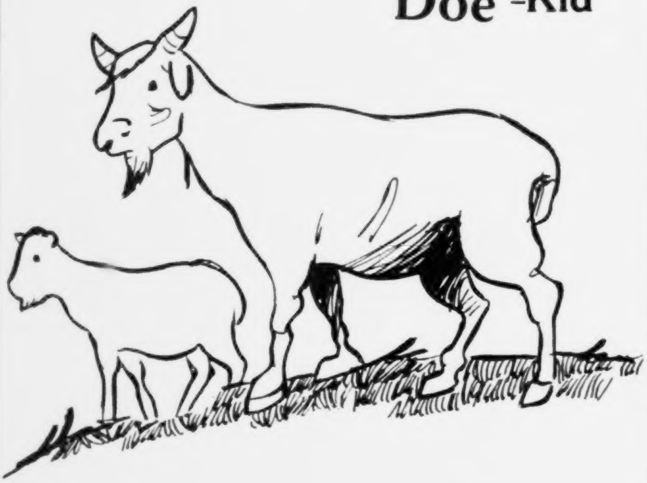
Mare- Foal



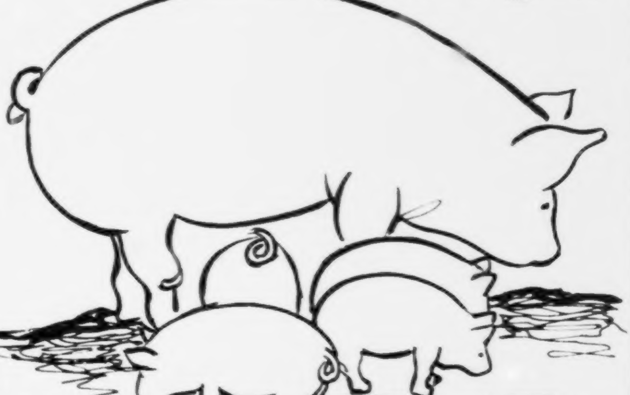
Cow-Calf



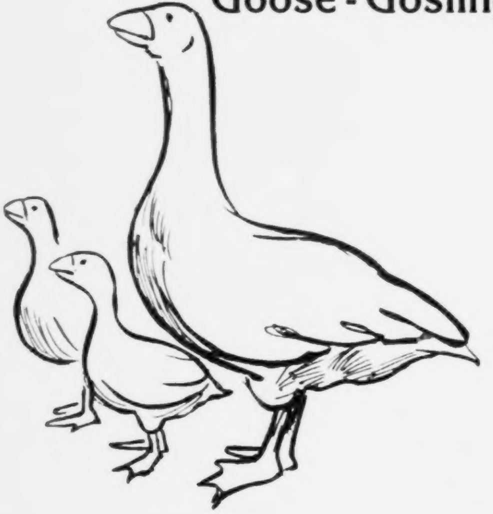
Hen -Chick



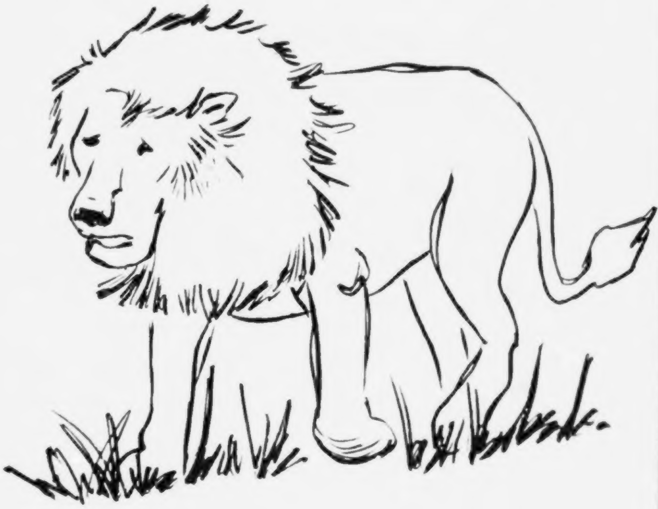
Doe -Kid



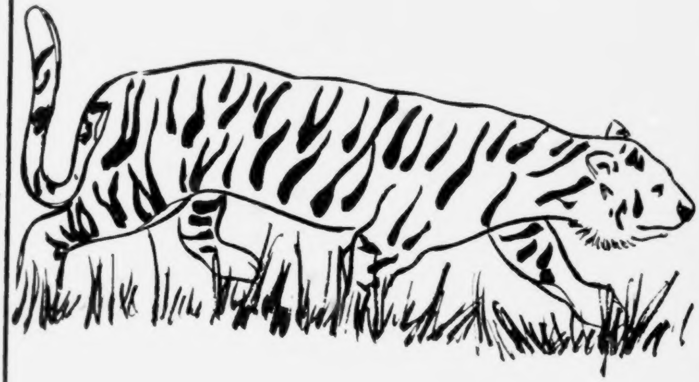
Sow -Piglets



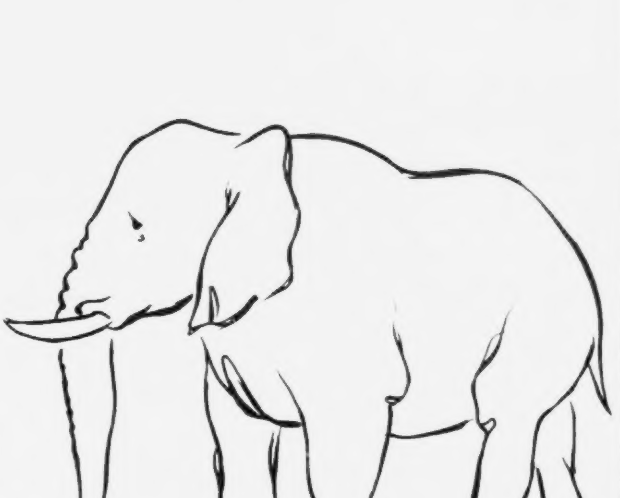
Goose - Goslings



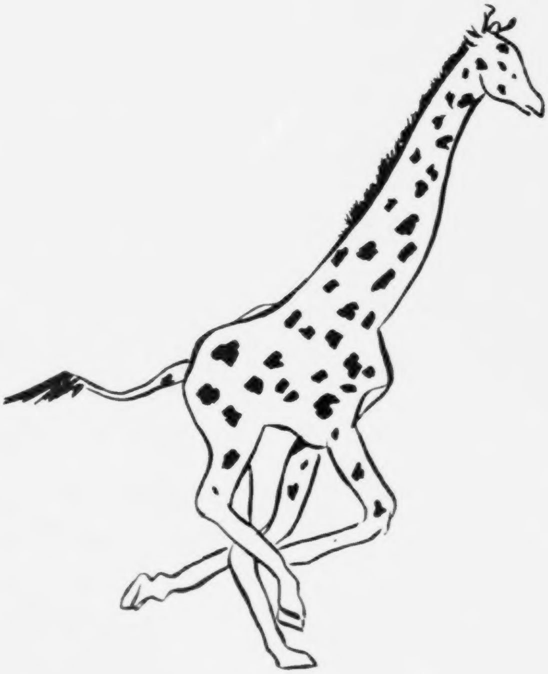
Lion



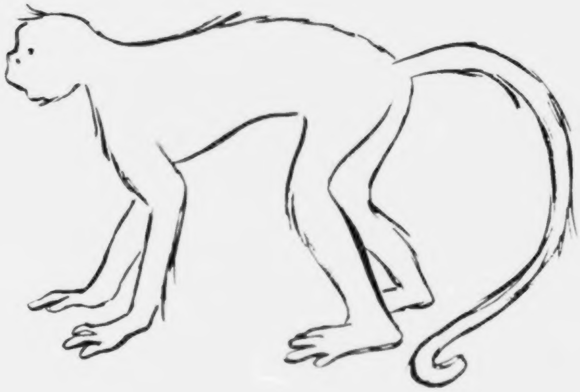
Tiger



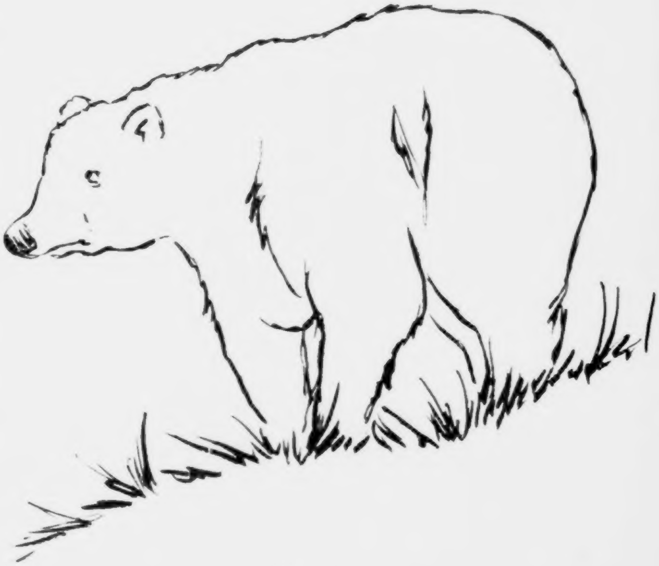
Elephant



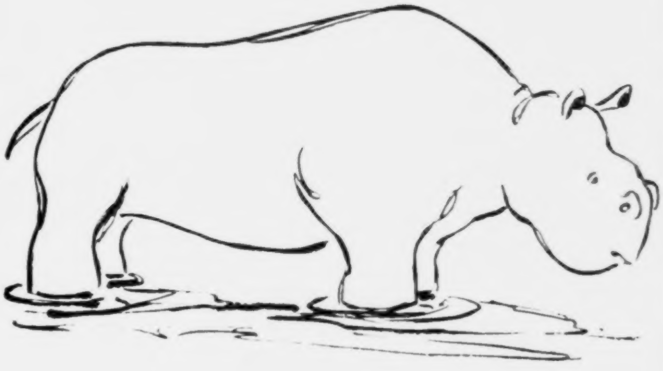
Giraffe



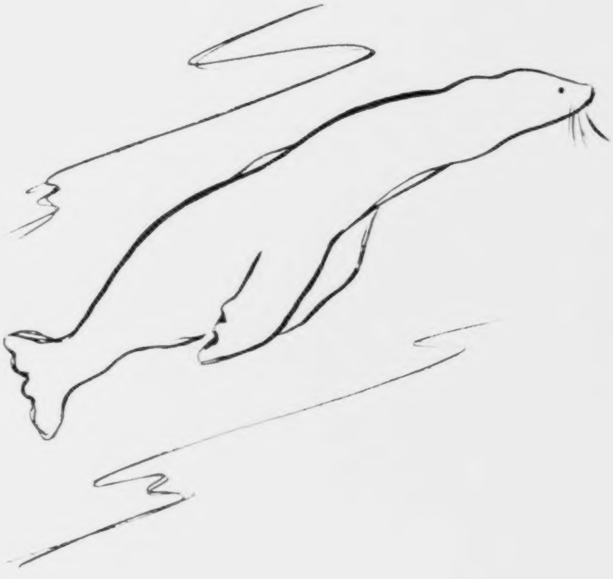
Monkey



Bear

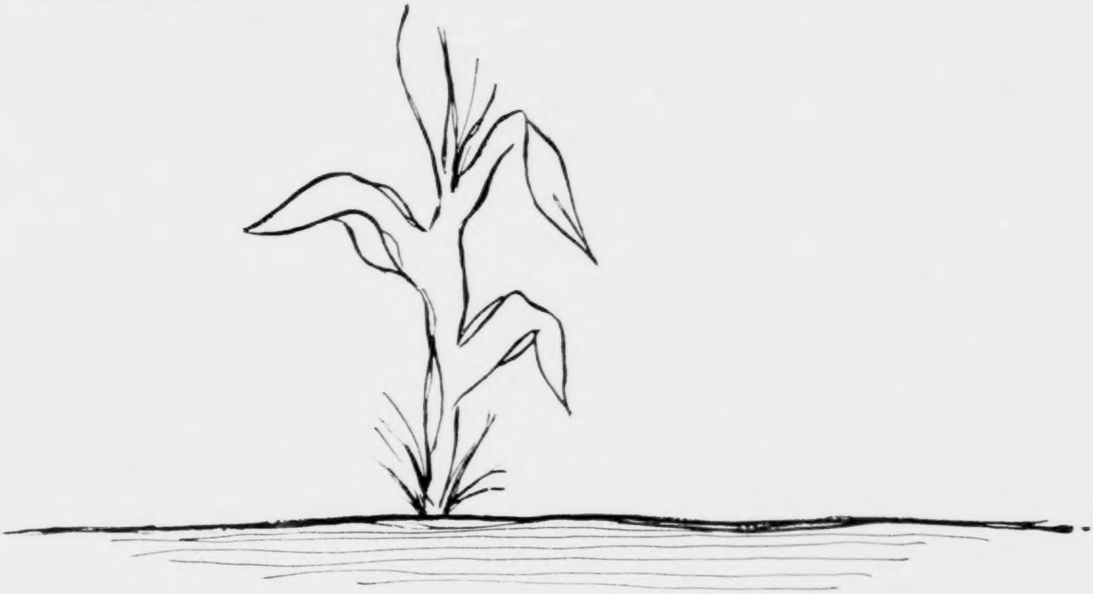


Hippo

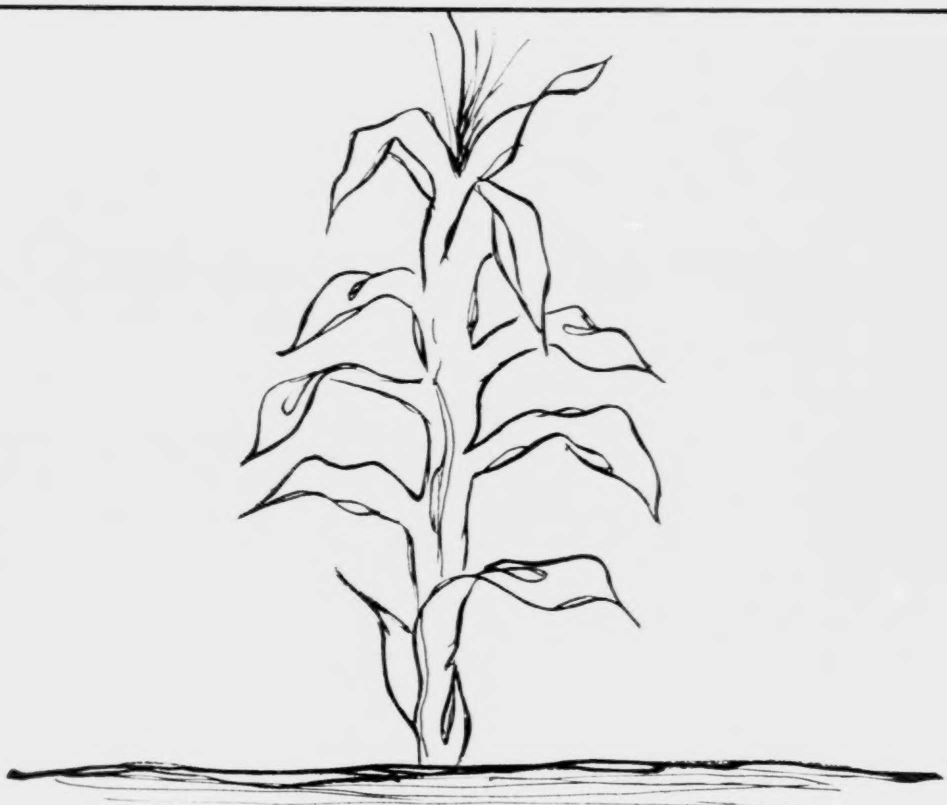


Sea Lion

Corn Plants

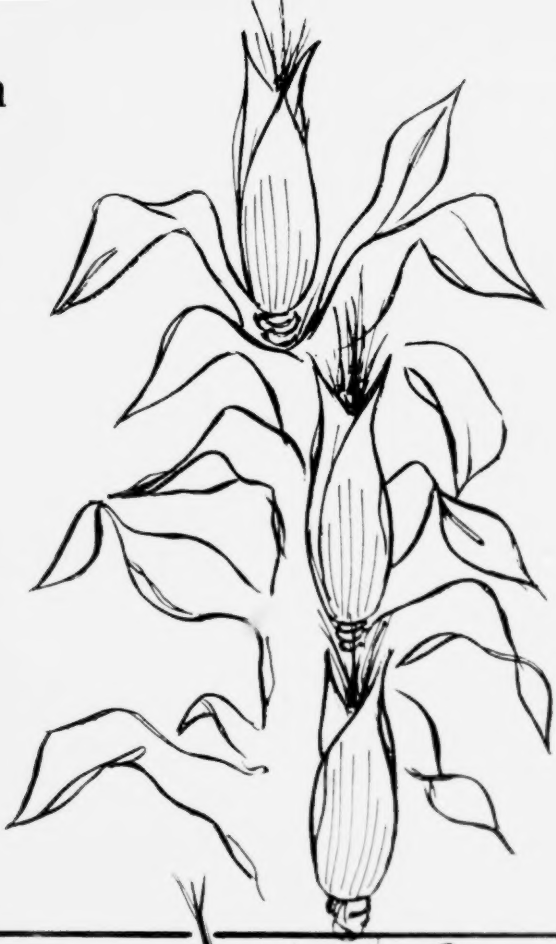


Start

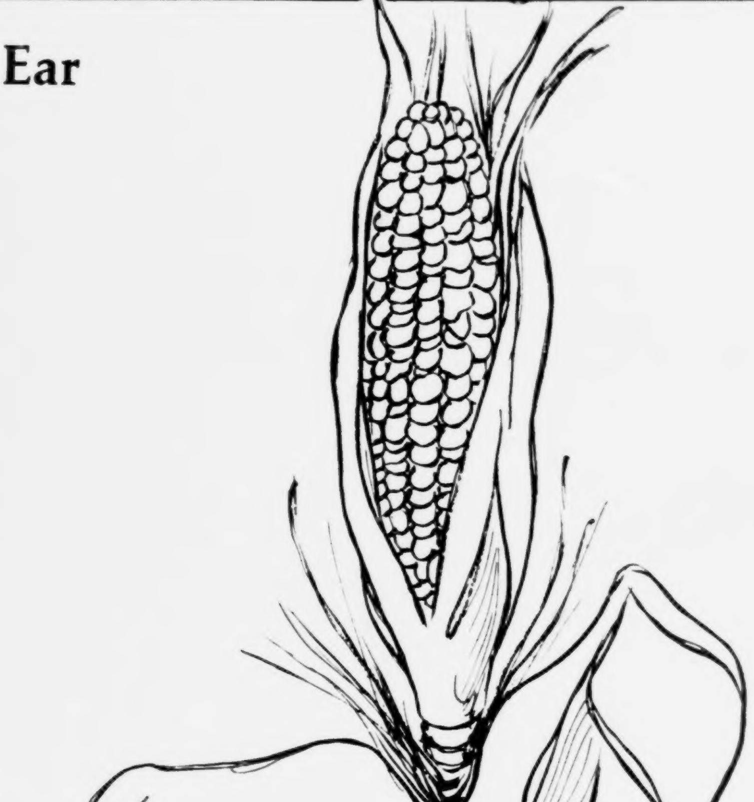


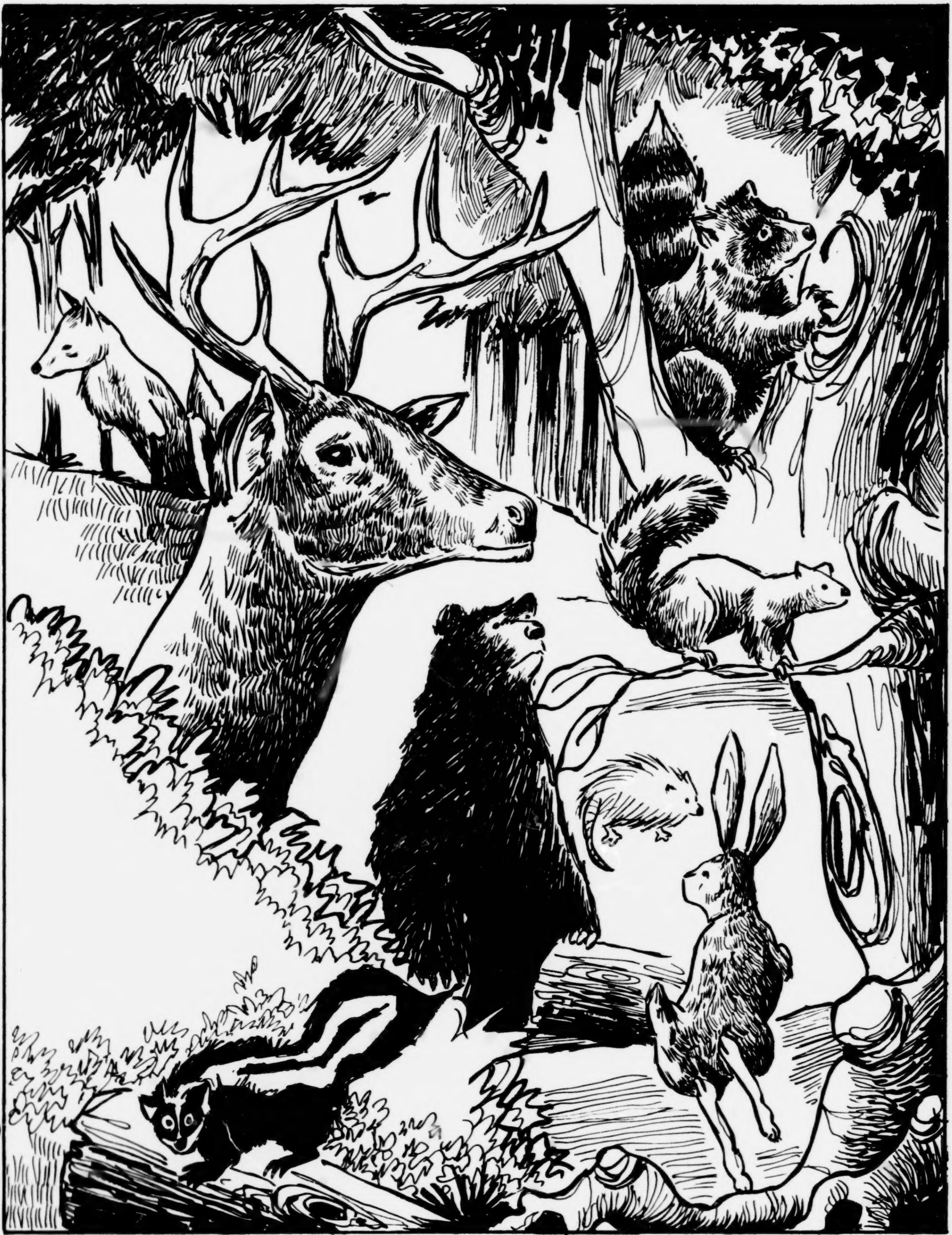
Young

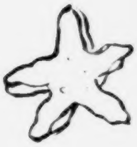
Full Grown

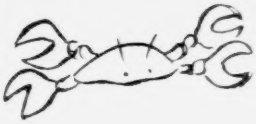


Ear









KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR

KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers

and the Curriculum Section

of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

First Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society." **Why Agriculture Is So Important**
Ag in the Classroom
United States Department of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

S. C. Department of Agriculture
  Dr. Richard H. Jesse
  Peggie L. Davis

Forestry Commission
  Rhett Bickley

Water Resources Commission
  Chris Brooks
  Danny L. Johnson

Clemson Extension Marine Research
  Jack Whetstone

Land Resources Commission
  John W. Parris
  Cary Chamblee
  Charles Logan
  Von Snelgrove

Wildlife and Marine Resources Department
  Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

FIRST GRADE

TABLE OF CONTENTS

Unit I:	Need: Who Needs Animals: Farm Animals Science; Language Arts; Art
Unit II:	Origin: Where Food Comes From: Milk Need: Food That We Need: Milk Marketing: Change for Market Math; Language Arts; Science, Health
Unit III:	Origin: Where Food Comes From: Poultry Need: Foods We Need: Eggs Marketing: Change for Market Language Arts; Science
Unit IV:	Marketing: From Farm to Table: Raw and Prepared Foods Social Studies; Language Arts
Unit V:	Marketing: Changing Natural Products: Grain Art; Math; Social Studies; Science
Unit VI:	Origin: From Farm to Table: Effects of Exposure and Cooking Science
Unit VII:	Managing a Farm: Helpful and Harmful Insects (Animals) Science; Language Arts; Health
Unit VIII:	Managing a Farm: Keeping Crops Healthy: Pesticides Science; Health
Unit IX:	Origin: Where Fruits Grow: Orchards Marketing: Change for Market Language Arts; Science
Unit X:	Managing a Farm: How Plants Grow: Row Crops/Truck Crops Science; Language Arts
Unit XI:	Managing a Farm: How Plants Grow: Cotton Science; Language Arts; Art
Unit XII:	Managing a Farm: Caring for Livestock Health; Science

NOTE: An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6). A brief resource list of manipulatives and teacher references is included with the kindergarten activities.

ILLUSTRATIONS INCLUDED

1-1	Individual farm animals
1-2	Dairy cow
1-4	Basic foods/origin
1-7	Insects
1-9	Fruit trees/fruits
1-11	Cotton

Grade 1

Unit 1

KEEPERS OF THE LAND

Instructional Area:
Science
Language Arts
Art

Agricultural Concept: Need: Who Needs Animals

Objective: Children will learn the purposes of different farm animals.

Introduction: Let children tell what foods they know come from animals. List animals on board. Next ask about animals we don't eat that also live on farms.

Activities:

1. Put pictures of various farm animals on the bulletin board. Talk about the animals and their uses. (Focus only on meat/other products/pleasure as the categories.) Have children put cards with the particular use(s) under the appropriate animals, e.g., cattle (meat, milk); chicken (meat, eggs); horse (fun, racing); rabbit (meat); goat (milk); turkey (meat); duck or goose (meat).

2. Explain to students that most farms are very large. A farmer generally raises only one kind of animal. For example, a poultry farmer raises thousands of birds. (Show pictures of farms from journals.)

3. Use animal pictures on bulletin board. Have each child make 2 cards with his/her name on each. On one card, have each student draw a "smiley face"; let the student place "smiley" cards under the animal that is the "most fun to raise." (opinion) On the other card, have each student draw $$; let the student place the $$ cards under the animal that will bring the farmer the most money. (opinion)

Culminating Activity: Have students draw what kind of "farm" they would have if they could have a farm. Then let them share their pictures and tell what animal(s) they would raise and why.

Materials:
Animal pictures/cards (some included on illustrations)
Crayons and paper, including cards/slips for names

Grade 1

Unit 2

KEEPERS OF THE LAND

Instructional Area:

Math
Language Arts
Science
Health

Agricultural Concept:

Origin: Where Food Comes From
Need: Foods That We Need
Marketing: How Natural Products Are Changed for Market

Objective:

Students will recognize that milk comes from dairy cows and is a basic food for people and animals.

Introduction:

Show the children pictures or samples of milk products and ask students to think about where they come from (butter, cheese, ice cream, yogurt, etc.)

Activities:

1. Hold up illustration of a dairy cow. Explain that the milk we drink comes from cows. Point out that many animals give milk to their babies, but milk we drink usually comes from cows. Ask children if any of them have fed milk to a puppy, kitten, etc. Then ask if they know why we need milk. Ask how they think we would look if we didn't have strong bones and teeth.

2. Talk with students about:
    a. the ways we drink milk (sweet, chocolate, buttermilk)
    b. the ways we "eat" milk as other milk products (butter, cheese, ice cream, yogurt). As an example, show the children whipping cream. Then make butter from the cream. (Explain what cream is first.)

        Recipe:
        whipping cream
        clean jar with lid
        salt

        Pour cream into jar and close lid. Let children take turns shaking the jar. After butter forms, pour off the excess liquid and lightly salt butter. Let children taste on bread or crackers.

3. As a group activity, write a language experience story about making butter.

4. Have children bring in different types of containers for milk and milk products. Discussion might include reading of label, comparison of container shapes and sizes. Teacher could lead students further to a discussion of measurement.

Culminating Activity: Give each child a sheet of paper with a picture of a cow. Have students cut several pictures of milk products from magazines and paste around the cow.

Materials:
Pictures or samples of milk products
Illustration of dairy cow
Whipping cream, jar, salt, bread or crackers, knife
Various containers/cartons

Resource: National Dairy Council (See Resource List in media center.)

Grade 1

Unit 3

KEEPERS OF THE LAND

Instructional Area: Language Arts
Science

Agricultural Concept: Origin: Where Food Comes From (Poultry)
Need: Foods We Need: Eggs
Marketing: How Natural Products Are Changed

Objective: Students learn the origin of eggs and several ways eggs (and milk) are changed for eating and marketing.

Introduction: Where do eggs come from? (Point out that many birds other than chickens lay eggs, but the ones we buy in the grocery store are from chickens.) Who ate eggs today?

Activities:

1. Discuss raw eggs and cooked eggs. How many ways can we cook eggs? (Scrambled eggs and hardboiled eggs, etc.) Let students talk about the changes - color, texture, taste. You might read Dr. Seuss' *Green Eggs and Ham.* Have a raw and a boiled egg available if possible.

2. Ask "Who likes birthday cakes?" Most cakes have eggs in them. Tell students other ways eggs are used: in some breads, puddings, etc.

3. Explain simply the stages of poultry production: Hens are in cages. Their eggs roll out from the slanted pens onto a conveyor belt. People look at the eggs with a candle behind the eggs to be sure they are all right. (This activity is called "candling.") Eggs are put in cartons. Trucks take the eggs to stores. Have students retell the stages in their own words.

4. How do we buy eggs in stores? Compare to how we buy milk (Unit 2).

5. Sequencing Game - Cut and paste activity. Children cut out or draw four pictures of a process (Ex. picture of cow, processing plant, grocery store and child drinking milk. Hen, egg, store, fried eggs.) Children paste these in order on a sheet of paper.

Culminating Activity: Have group summarize ways we use milk and eggs. Write these on the board. (Units 2 and 3)

Materials:

Eggs
Pictures for sequencing

Grade 1

Unit 4

KEEPERS OF THE LAND

Instructional Area: Social Studies
Language Arts

Agricultural Concept: Marketing: From Farm to Table

Objective: Students will learn about foods that can be eaten raw and foods that must be prepared.

Introduction: Ask about basic foods (bacon, milk, eggs, cheese, carrots, peaches, hamburger). Let students tell what animal or kind of plant each comes from.

Activities:

1. a. Have students name their favorite foods and list on board. Then ask students which come "ready to eat" and which don't.
   b. Display pictures (see illustrations) and let students tell "which came first" (e.g., apple or applesauce). Let students think up other pairs and give one of the items so additional students can supply a logical match.

2. Next discuss animal feed: what do farm animals eat "as it grows" (grass) and what feed does the farmer need to prepare or buy prepared? (silage, various grains)

3. Make a class recipe book. Let students dictate their own "recipe" to the teacher. (Parents will especially enjoy seeing a copy of the book: recipes will be humorous.)

Culminating Activity: Plan a field trip to a supermarket or a farmer's market. Focus on raw vs. prepared foods.

Materials: Paper for recipe book
Illustrations

Grade 1

Unit 5

KEEPERS OF THE LAND

Instructional Area/Skill:

Art
Math
Social Studies
Science

Agricultural Concept: Marketing: Changing Natural Products: Grain

Objective: Children will learn uses for grain.

Introduction: Show students a wheat stalk; ask who eats this food. (They all do.) Show students flour, bread or bread products.

Activities:

1. If possible, show students how wheat or other grains can be ground into flour by letting each one take a turn at a mortar, pestle, and some grain. Or use a rock and a suitable container. Wheat, millet, barley, rye, oats can be obtained from local farmers. Dry grain stalks are available at a florist.

2. Let some students tell how many things they can think of that use flour (rolls, cakes, cookies, etc.), then talk about different kinds of flour/meal: wheat, corn. You might bake/provide biscuits and cornbread. Let students see the difference between flour and meal.

   You could also use white and whole-wheat bread and show students the difference in the flours.

3. Read Bread and Jam for Frances or another book. (see Resource List)

4. Teach students that animals also eat grains. (Some farm animals, such as cattle and horses, graze on a variety of grasses in the open fields. Most farm animals eat prepared grains, especially corn and soybeans. Cattle eat prepared kernel corn and silage. Hogs eat corn or other grains with soybean supplements. Nearly all the corn in the state and 1/2 the soybeans are used to feed chickens.)

   Have students draw a picture of a farm animal eating grain.

Culminating Activity: Let some students help summarize how a farmer can sell his grain.

Materials:

Wheat stalk
Mortar, pestle and grain
Wheat, white flour, corn meal
Baked biscuits, cornbread, white and whole-wheat bread
Ingredients for #4 as desired

Grade 1

Unit 6

KEEPERS OF THE LAND

Instructional Area: Science

Agricultural Concept: Origin of food: From Farm to Table

Objective: Students will learn how exposure and cooking change food color, texture, taste.

Introduction: Cut an apple. Discuss the color and firmness with class, then leave in window for tomorrow.

Activities:

1. Let students observe what happened to the fruit when the protective peel was taken off. Explain that we must take care of food.
2. Have students observe how cooking changes food. You might show them a raw apple and some cooked apple. Or bring cans of applesauce, apple jelly, apple butter, apple juice and discuss how cooking (or) preserving changed these foods.
3. Let some students sample small bits of fresh apple and small sips of apple juice and compare the taste.
4. You may wish to place some grapes in the sun and observe as they turn to raisins over time.
5. Talk about the many ways foods are preserved (pickling, freezing, canning, etc.) See how many ways students can name.

Culminating Activity: Arrange to have raw samples of the same vegetables to be served at lunch. Let some students try them "raw", then eat cooked vegetables at lunch. Discuss the differences in taste, texture, color. Have children tell their preferences.

Materials:

Apple and apple products
Grapes
Samples of raw vegetables

Grade 1

Unit 7

KEEPERS OF THE LAND

Instructional Area:
Science
Language arts
Health

Agricultural Concept: Farm Management: Helpful and Harmful Insects (Animals)

Objective: Students will recognize that some insects (animals) are helpful and some are harmful.

Introduction: Teacher asks students who likes insects and asks "Why /Why not?"

Activities:

1. Teacher introduces concept of harmful versus helpful insects by using books, visual aids, and/or an insect collection. (See illustration.)

   Example:

   Helpful

   butterfly (pollinates)
   bee (pollinates; makes honey)
   ant (loosens soil)
   ladybug (eats other insects)
   praying mantis (eats other insects)

   Harmful

   boll weevil (eats cotton)
   termite (eats wood)
   fire ant (stings, makes mounds in fields)
   fly (bothers animals, carries sicknesses)
   corn ear worms (eats corn)
   beetle (eats crops)

   Insects are necessary animals. They provide the "helpful" reasons listed above and also serve as food for fish, birds, other animals. The same insect can be helpful and harmful. For example, a wasp is helpful in pollinating crops, but harmful if it stings someone.

2. Game: Teacher names an insect. Student identifies insect as harmful/helpful by raising hands, standing up, answering yes/no, etc.

3. Take a nature walk. Let students look for insects "helping' or "harming" plants outdoors. Look at the parts (legs, feelers, wings) of the insect. Let students talk about how various insects are different.

4. Other helpful/harmful animals can be introduced. (Earthworms loosen the soil and keep it rich. Toads eat cutworms, potato bugs, grasshoppers, slugs. Birds eat insects and weed seeds.)

Culminating Activity: Students draw pictures of helpful insects in one column and harmful in another.

Materials:
Collection or illustration of common insects (animals)
Books about insects
Illustration

Grade 1

Unit 8

KEEPERS OF THE LAND

Instructional Area: Science/Health

Agricultural Concept: Managing a Farm: Keeping Crops Healthy

Objective: Students will understand that pesticides are helpful if used correctly.

Introduction: Show a healthy fruit/vegetable and one damaged by a pest. Ask students which they would rather eat.

Activities:

1. Talk about what we might do to protect our food from pests. Write students' suggestions on the board.
2. Introduce the word pesticide. Explain that pesticides are used to kill insects and other pests, but can hurt people if not used correctly. Emphasize the fact that only adults should use them.
3. Distribute Mr. Yuk stickers. Explain that when they see this sticker they are not to touch the product (bottle or jar or can). Send the stickers home with a note to parents explaining how they are to be used.

Culminating Activity: Have students summarize the concepts they have learned about pesticides by completing open-ended sentences. Pesticides are good if....; pesticides are bad if ....

Materials: Mr. Yuk stickers - available from:

Poison Control Center
University of South Carolina
Columbia, South Carolina 29208

To order send a stamped, self-addressed envelope. Cost for a sheet of 12 is ten cents. If large quantities are ordered, make checks payable to USC.

Grade 1

Unit 9

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Science

Agricultural Concept:

Origin: Where Fruits Grow?
Marketing: How Natural Products Are Changed for Market

Objective:

Students will be able to identify and describe several fruits that grow on trees. Students will also be able to recognize and describe fruits in different forms.

Introduction:

Provide different fruits. Place fruits in a "mystery" box or bag. Children use their senses (sight, touch, smell, taste, sound) to identify familiar fruits. Include one exotic fruit children will not know (e.g., kiwi, mango).

Activities:

1. Show illustrations of fruit trees and fruit while displaying a piece of real fruit from each. Explain that many fruits (but not all) grow on trees. If possible, take a field trip to an orchard.

2. Have a child taste a small sample of a familiar fruit without letting the other children see the fruit.

   Encourage the child who has sampled the fruit to describe it in as many ways as possible. The other children can take turns guessing the name of the fruit.

3. Let other children then sample the fruit. Encourage children to use words which describe the sounds they have heard (e.g.,crunch). They may use descriptive words for each of the 5 senses: spicy (smell); salty, sweet (taste); red, orange (sight); mushy, chewy, fuzzy, juicy (feel).

4. Tasting party: have different forms of a fruit available such as juice, jams, jellies, dried fruit, pie, etc.

5. As a group activity, oral or written, have the children describe how they would feel if they were a fruit. A banana being peeled? An orange being squeezed?

Culminating Activity: Have children draw a mural showing what they have learned about fruits.

Materials:

Illustration of fruit trees/fruits
Variety of fruits and fruit products
Spoons; knife for teacher
Paper cups or plates if appropriate
Long paper and crayons/chalk for mural

Grade 1

Unit 10

KEEPERS OF THE LAND

Instructional Area:

Science
Language Arts

Agricultural Concept:

Managing a farm: How Plants Grow: Row Crops/Truck Crops

Objective:

Children will learn about different seeds, different plants, and what plants need to grow.

Introduction:

Show students several different kinds of common seeds (e.g., corn, peas, watermelon, cotton, cantaloupe, tomato, soybean). Let them talk about the shapes and sizes.

Activities:

1. On bulletin board, have pictures of each plant for which you have seeds. Let students try to match seeds with the food/product they think it produces. See how many get them right. (Big seeds don't necessarily produce big plants!)

2. Let students help list what is needed to grow plants (air, light, water, soil). Explain that the farmer plants the crops in a big field. He adds water (irrigation), pesticides, and fertilizer (food) as needed.

3. Using the pictures from packages of seeds or seed catalogues, let students talk about the different plants, fruits and vegetables, and plant leaves. Some plants are vines; some are bushes. Fruits and vegetables are different sizes and colors, etc.

Culminating Activity:

Plant at least 3 different seeds that children will care for. As plants sprout, let children compare shape, color, and size of leaves.

Materials:

Photos from seed catalogues (e.g., Park Seed) and seed packages
Common seeds
Pots/cups/soil for planting

Grade 1

Unit 11

KEEPERS OF THE LAND

Instructional Area: Science
Language Arts
Art

Agricultural Concept: Managing a Farm: How Plants Grow: Cotton

Objective: Students will learn how cotton grows.

Introduction: Show students either absorbent cotton or a piece of cotton cloth. Ask them where they think it comes from.

Activities:

1. Show students a cotton plant if possible (if not, use illustrations) Talk about the different parts--roots, leaves, blossoms, bolls. If possible, have a cotton boll that students can examine and feel the seeds inside. Let them look at cotton seeds and talk about color, shape.
2. Smell cottonseed oil. Talk about uses: salad dressing, mayonnaise, salad oil. The oil comes from crushing the seeds.
3. Examine other cotton by-products as available.
4. Show children cotton thread. If possible, show a picture of a spinning wheel or a textile automated spinner so students can see how cotton turns to thread. Or imitate the process by twisting absorbent cotton. Check labels on children's clothes, jeans, etc. Tell them whether they are wearing cotton.

Culminating Activity: Put cotton balls in a jar and let students guess how many are there. (Don't have too large a jar, or numbers will go too high!) Then let students make a picture using some cotton balls. Cotton ball pictures could be about clouds, snowmen, trees, cottonball men. Let children explain their creations to the class.

Materials:

Cotton seed
Cotton plant with flowers and bolls or illustrations
Ginned and un-ginned cotton, if possible
Cotton by-products if available- lint,
  cottonseed, cottonseed oil, cakemeal
Cotton thread and yarn
Cotton balls and glass jar

See Resource List for National Cotton Council kit of products.

Grade 1

Unit 12

KEEPERS OF THE LAND

Instructional Area: Health
Science

Agricultural Concept: Managing a Farm: Caring for Livestock

Objective: Students will learn that animals need the same basics as people.

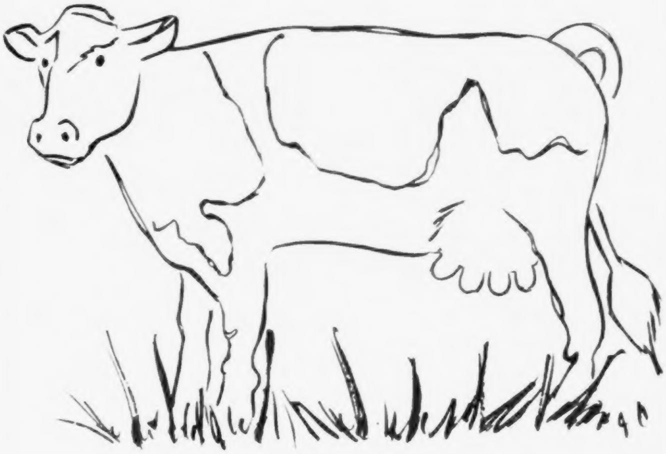
Introduction: Ask children what they need to be healthy (food, water, a clean place to sleep, air). Ask about care from doctors. Write the list on the board.

Activities:

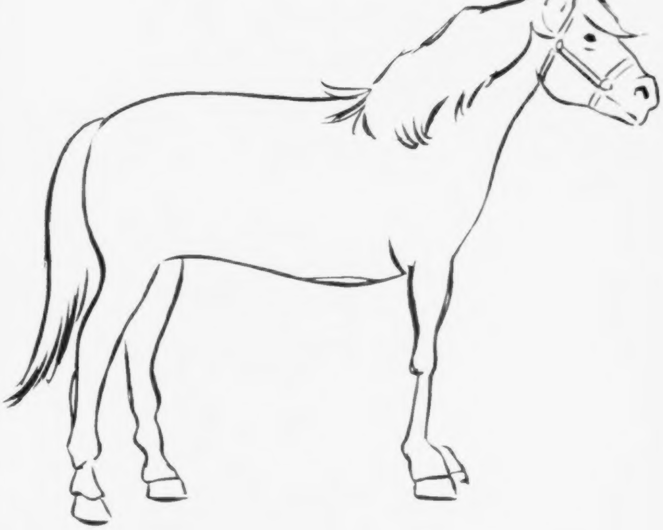
1. Ask children what things on the list animals need to be healthy.
2. Food: What foods do people need to be healthy? Do animals eat the same things? Talk about what animals eat. Then attach magazine pictures of foods (especially grains) to paper clips. Let students use fishing poles made of stick, string, and magnets to fish out a food and tell if animals, people (or both) eat it.
3. Water: Have glasses of water--one pure, another with "junk". Ask which the children would want to drink. Explain that animals need clean water to drink, too.
4. Think about other ways water is used (cleaning, dishwashing...) at school. How else is it used at home? Do animals use water in the same ways? (Cows are washed before milking; animal pens/stalls are washed, etc.)
5. Introduce the word veterinarian. If possible, have a vet visit the class. If not, explain to children what a vet does. (Some may have pets who visit the vet.)

Culminating Activity: Let students decide what a pet goldfish needs to be healthy. If possible, buy a pet and let students care for it.

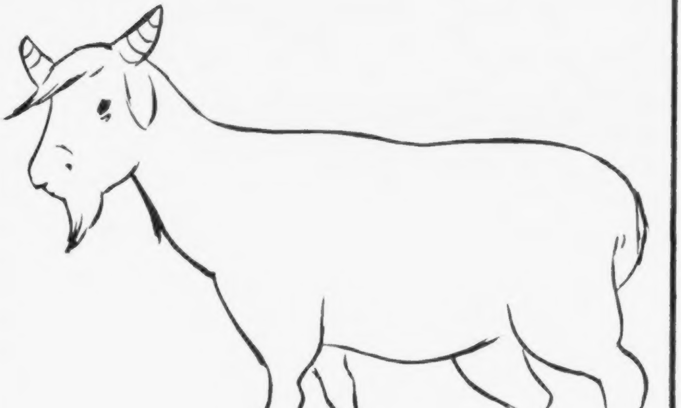
Materials: Pictures of foods
Water jars/glasses as described in #3 above
Pet (if possible)



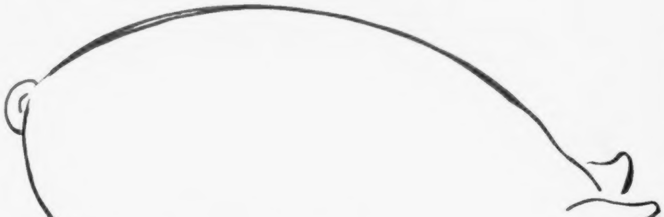
Cow



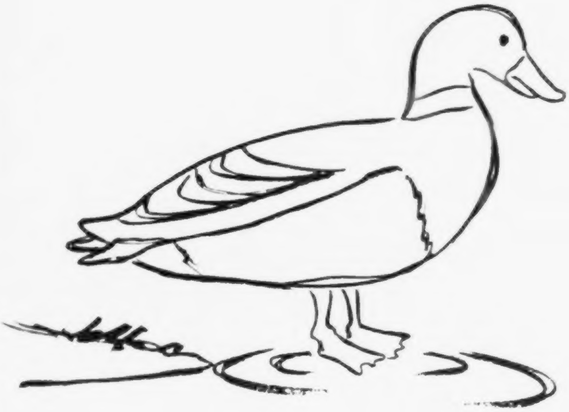
Horse



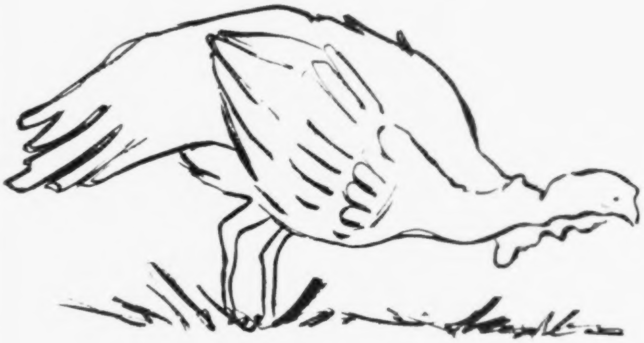
Goat



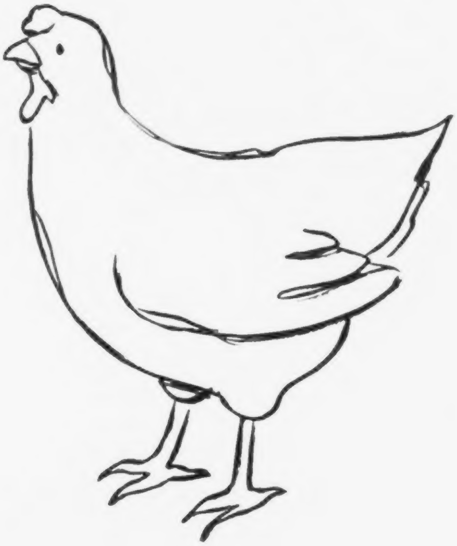
Hog



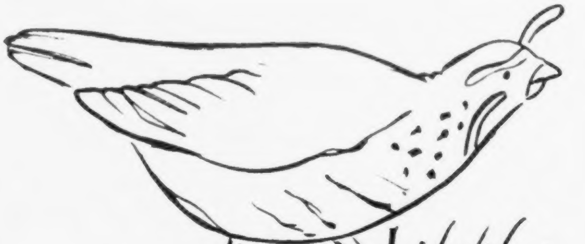
Duck



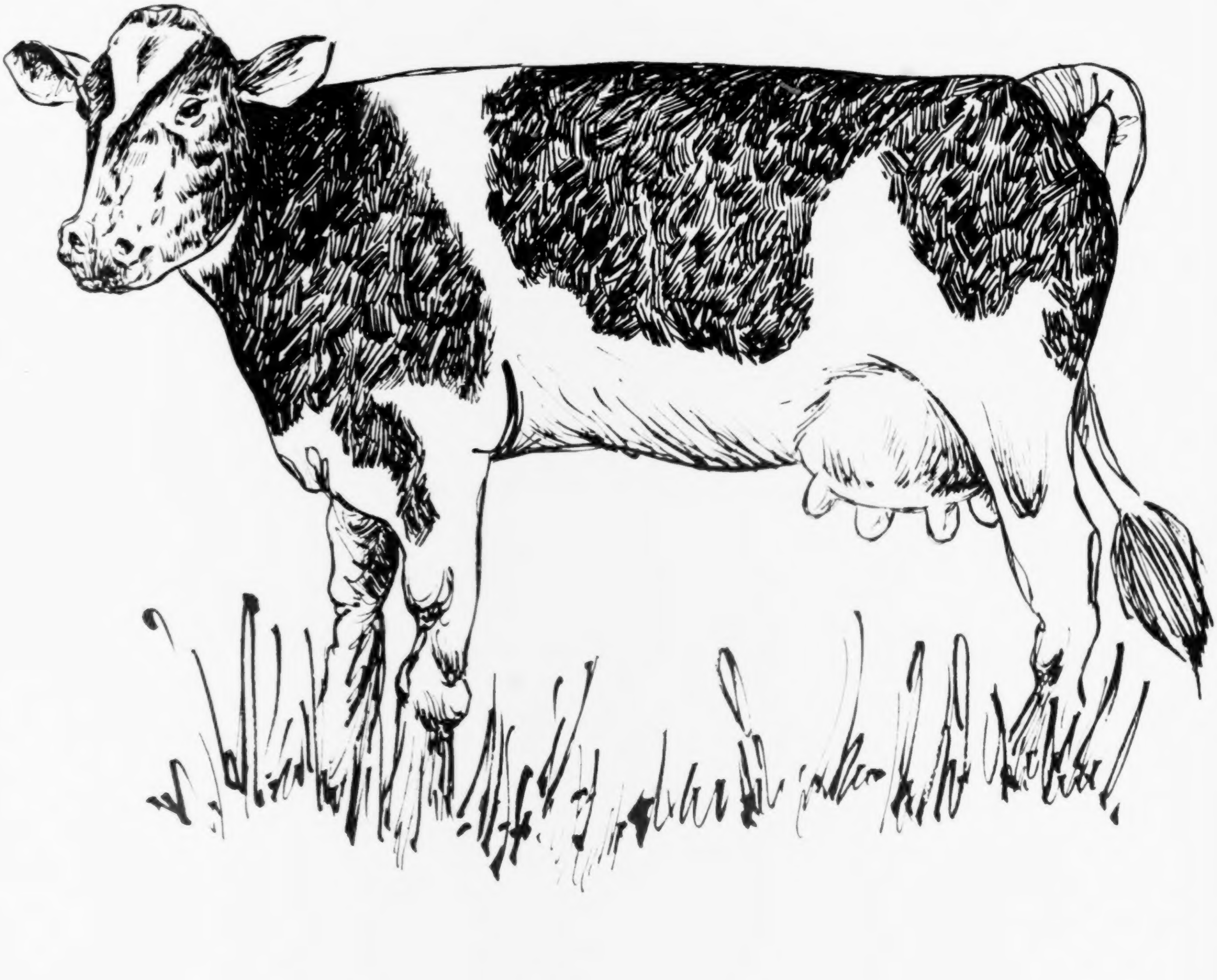
Turkey

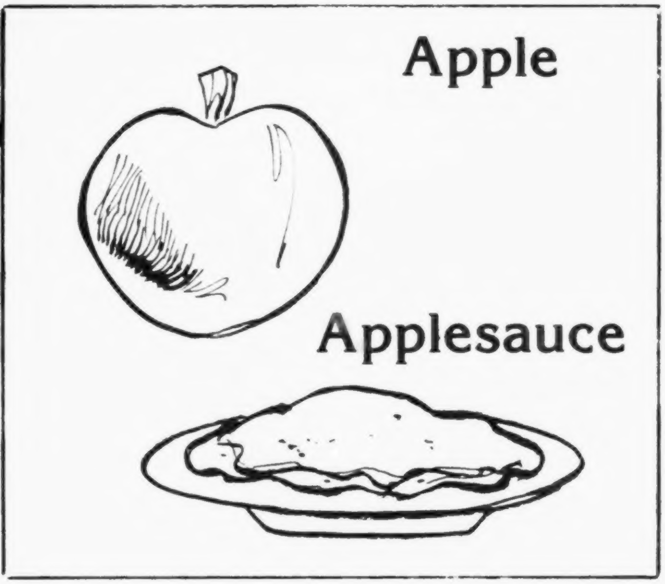


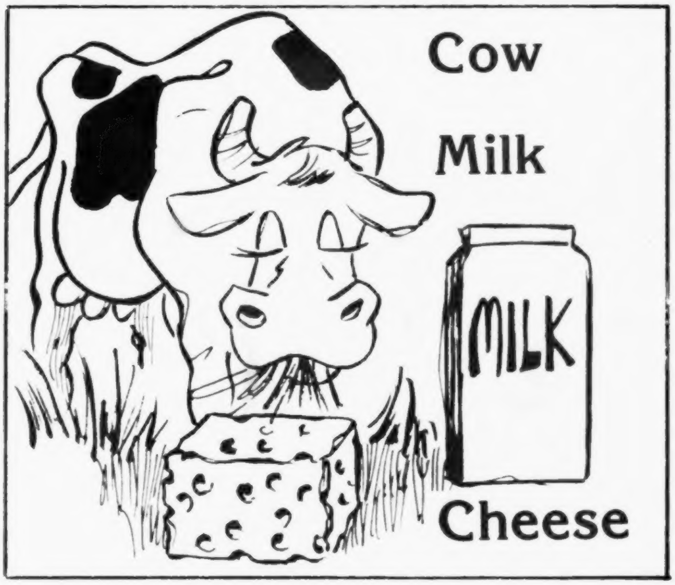
Chicken

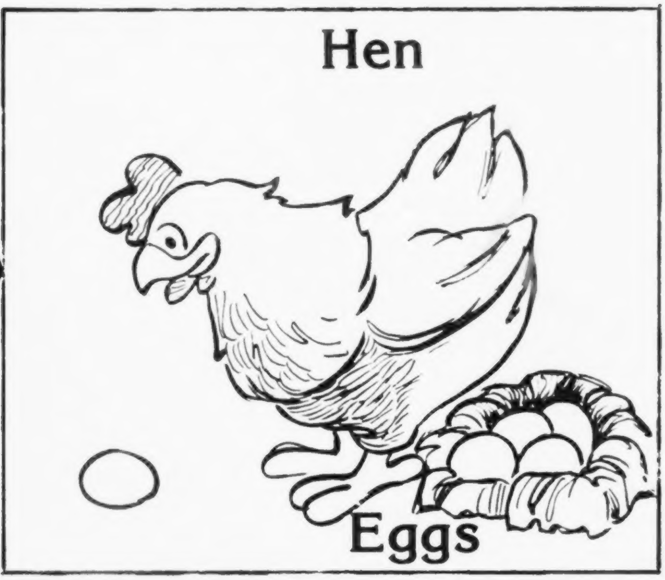


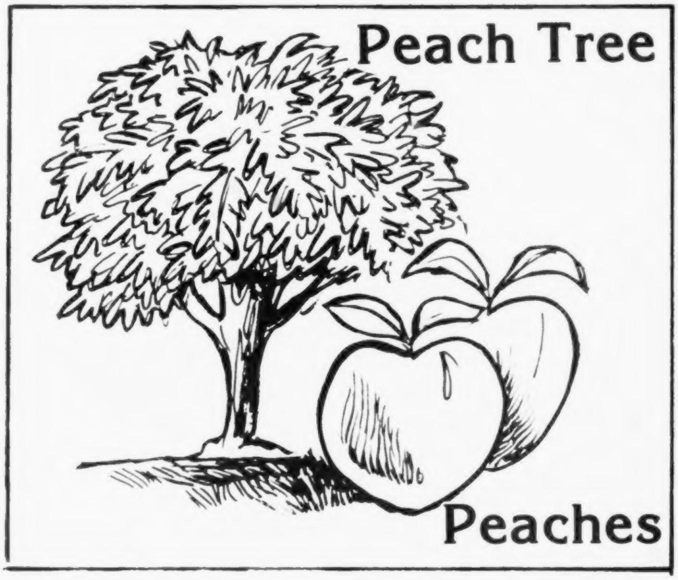
Quail

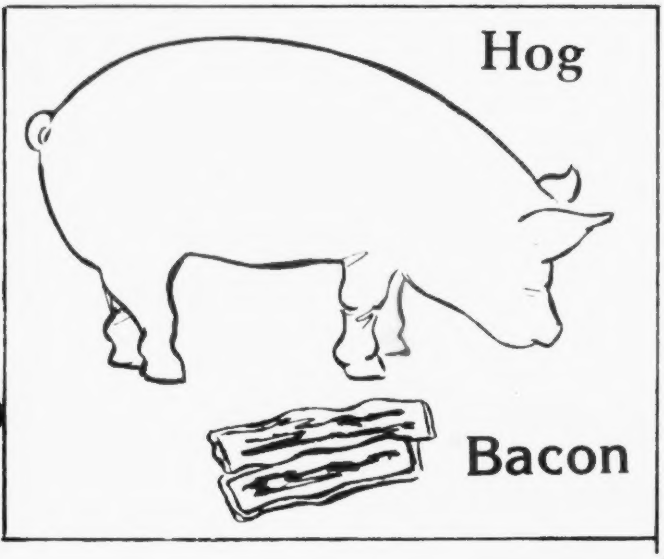


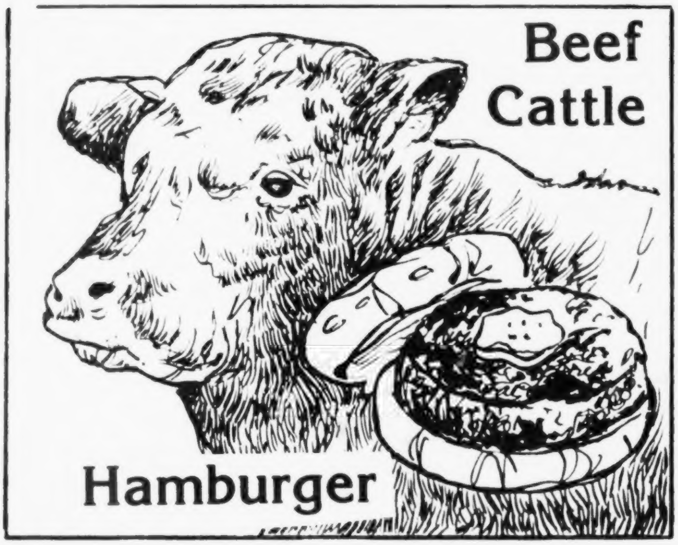

Apple
Applesauce

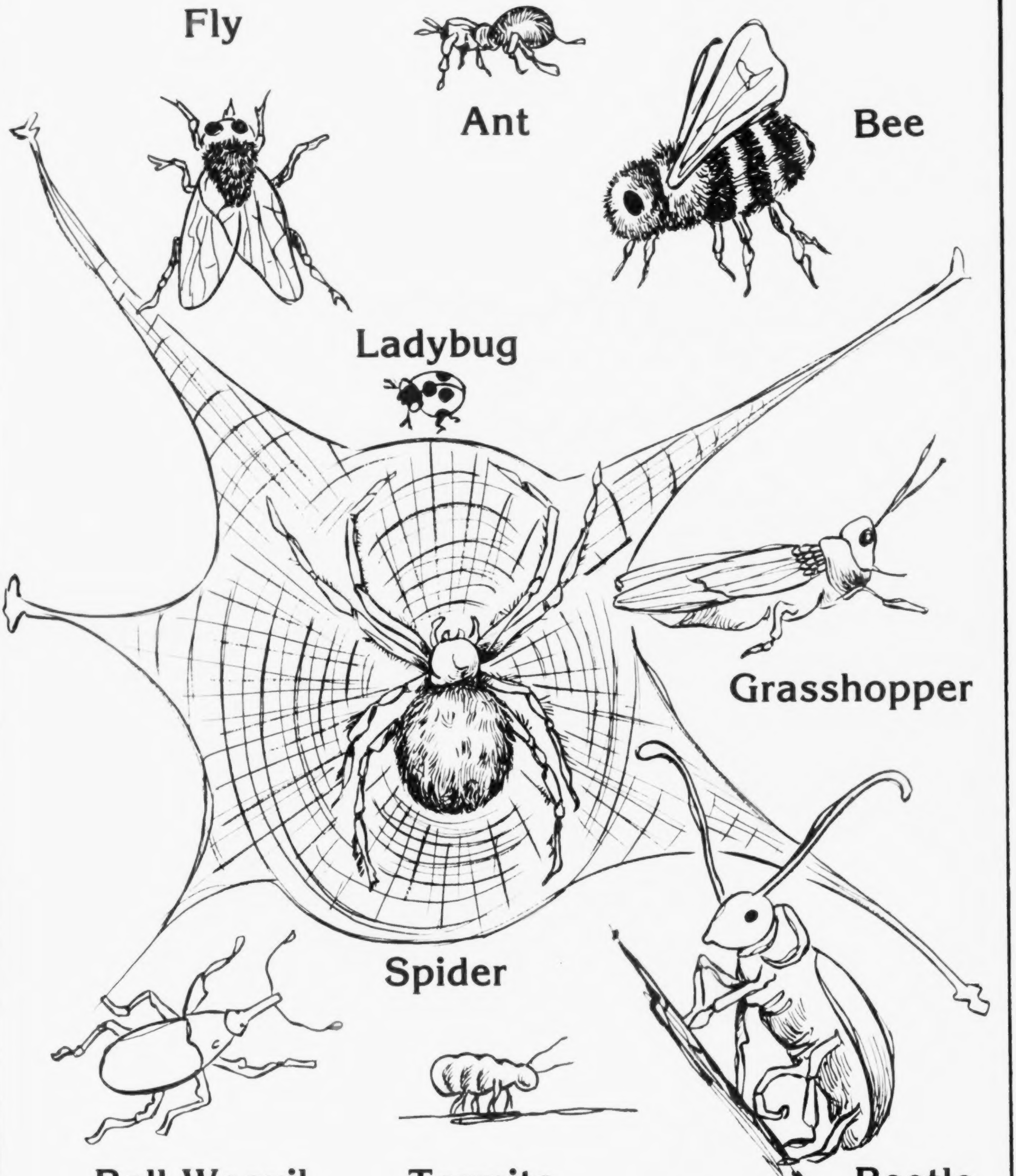

Cow
Milk
MILK
Cheese


Hen
Eggs

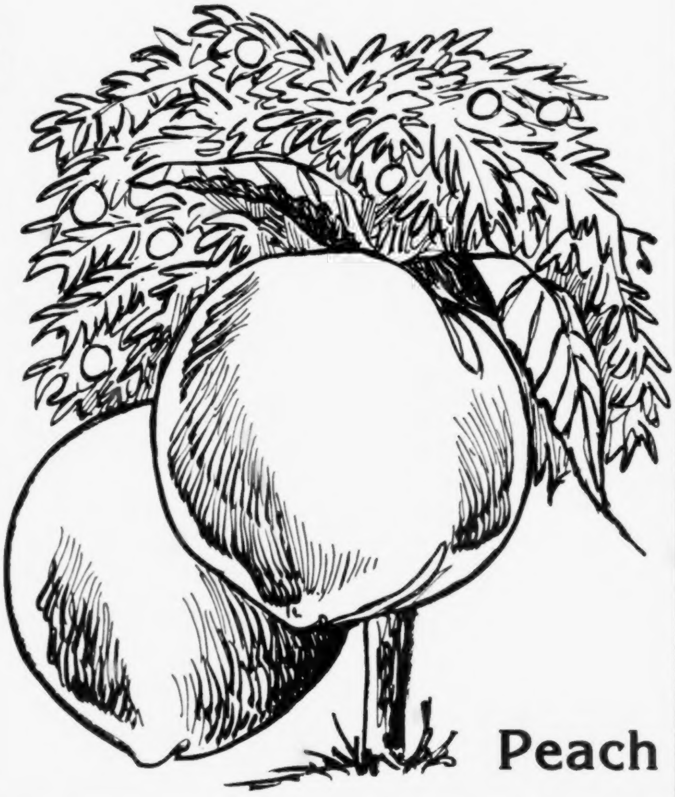

Peach Tree
Peaches


Hog
Bacon


Beef
Cattle
Hamburger

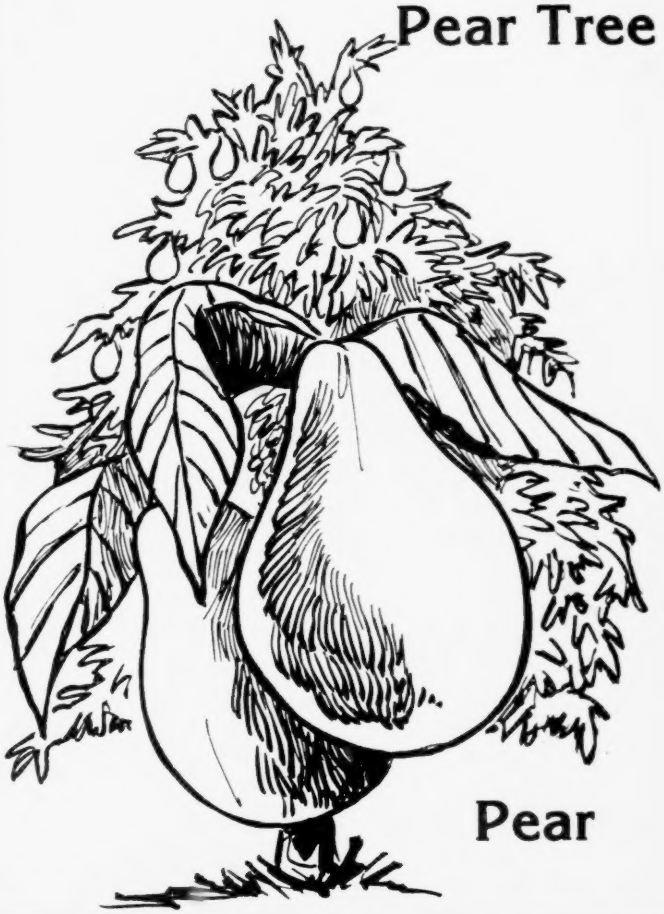

Fly
Ant
Bee
Ladybug
Grasshopper
Spider
Boll Weevil
Termite
Beetle

Peach Tree



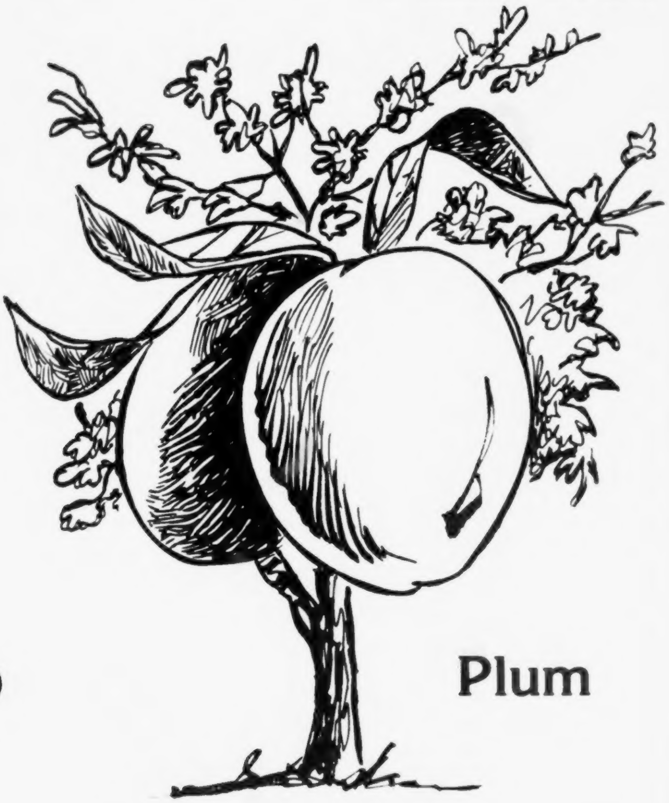
Peach

Pear Tree



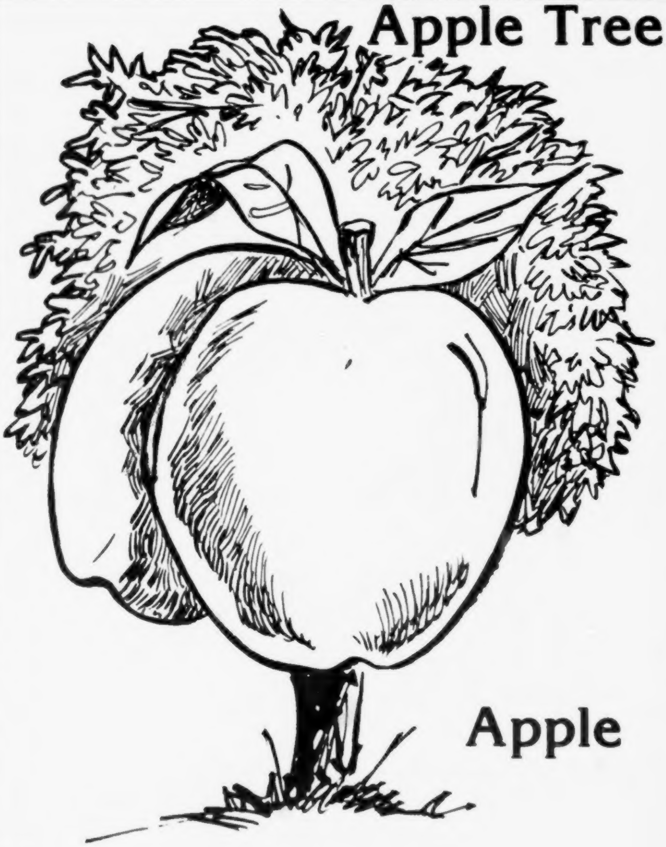
Pear

Plum Tree

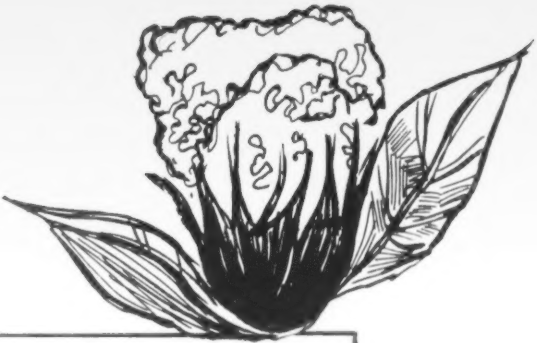


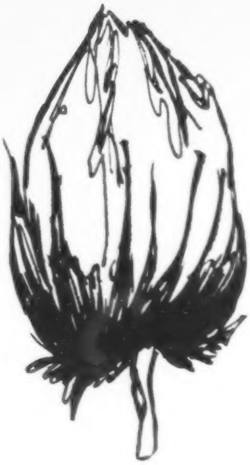
Plum

Apple Tree



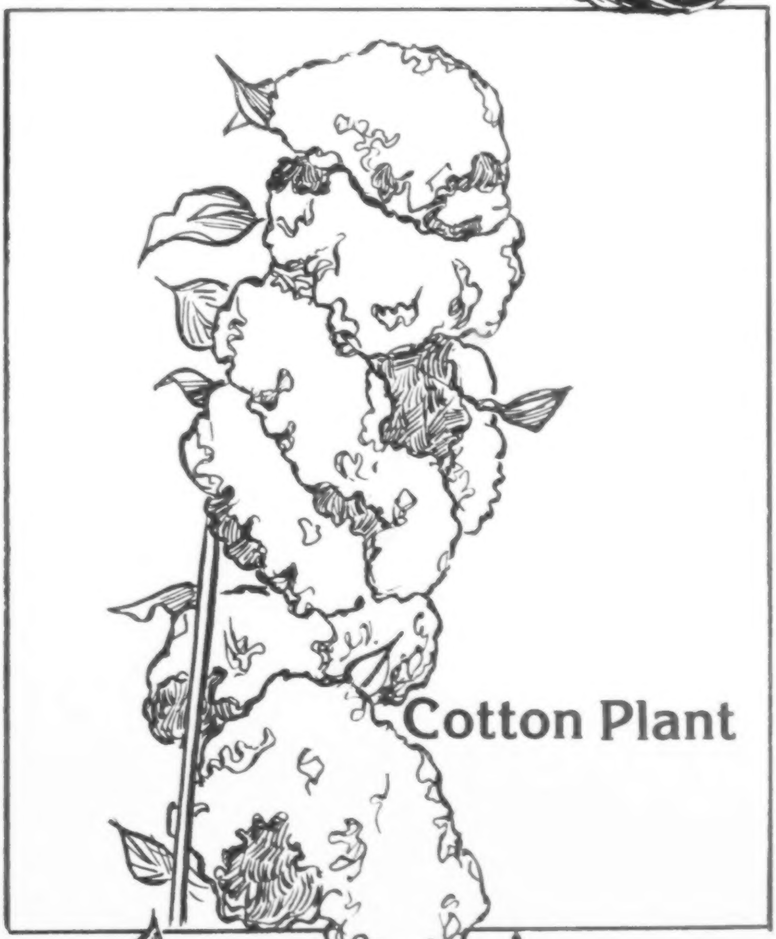
Apple



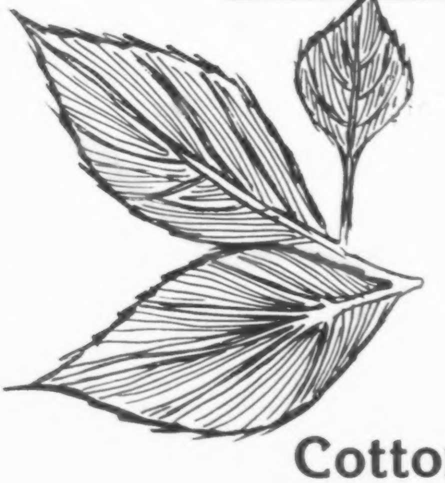


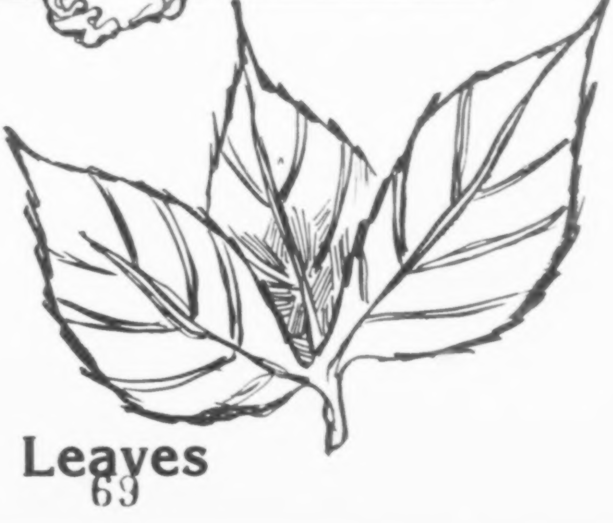
Boll

Bloom



Cotton Plant





Cotton Leaves

KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers
and the Curriculum Section
of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

Second Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society."

Why Agriculture Is So Important
Ag in the Classroom
United States Department
of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

S. C. Department of Agriculture
 Dr. Richard H. Jesse
 Peggie L. Davis

Forestry Commission
 Rhett Bickley

Water Resources Commission
 Chris Brooks
 Danny L. Johnson

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

Clemson Extension Marine Research
 Jack Whetstone

Land Resources Commission
 John W. Parris
 Cary Chamblee
 Charles Logan
 Von Snelgrove

Wildlife and Marine Resources Department
 Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas**: art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities**, and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

SECOND GRADE

TABLE OF CONTENTS

Unit I: Managing a Farm: The Seasons: How Orchards Change
Art; Language Arts; Science

Unit II: Managing a Farm: Caring for Livestock: Effects of Weather
Health; Science; Art

Unit III: Origin: Plant Growth: The Effects of Light and Water
Math; Science

Unit IV: Managing a Farm: Land Resources and Erosion
Science

Unit V: Marketing: Keeping Food Fresh: Fruits and Vegetables
Science; Health

Unit VI: Marketing: Advertising the Product: Supermarket Ads
Language Arts; Math

Unit VII: Managing a Farm: Poultry Farms
Language Arts; Science

Unit VIII: Origin: Aquaculture: A Catfish Farm
Science; Math; Art

Unit IX: Origin: Products from Trees
Art; Language Arts

Unit X: Need: Who Needs the Forest: Animals
Science

Unit XI: Need: Why We Need Foods: Vegetables
Health; Art; Math

Unit XII: Origin: Where Foods Come From: Review
Science; Language Arts

NOTE: An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6). A brief resource list of manipulatives and teacher references is included with the kindergarten activities.

ILLUSTRATIONS INCLUDED

2-1	Fruit trees/fruits
2-4	Sand dunes
2-7	Bingo card
2-10	Forest animals

Grade 2

Unit 1

KEEPERS OF THE LAND

Instructional Area:
Art
Language Arts
Science

Agricultural Concept: Managing a Farm: The Seasons: Orchards

Objective: Students will learn about the changes in an orchard throughout the year.

Introduction: Ask students what the four seasons are. How do we know it is winter, fall, spring, summer?

Activities:

1. Explain to students that trees and orchards change throughout the year. Talk about what the peach farmer needs to do each season:

   Winter- Farmers do most of their pruning, or cutting, of branches. Trees are not growing then.

   Spring- Trees bud and bloom. Farmers spray them for pests. Bees are brought in to pollinate trees. When small fruits form, the farmer thins them.

   Summer-Peaches are ready to be picked.

   Fall- Trees begin losing leaves.

2. Show children pictures of fruits and trees. Students use newspaper and flour paste to make papier mache' fruits. These fruits can be matched with illustrations or drawings of trees.

3. Students pretend they are fruit trees and describe the changes they go through during the year (i.e., what they look like, feel, see).

Culminating Activity: Let students draw a picture of an orchard or a fruit tree in their favorite part of the growing cycle.

Materials:
Illustration
Any seasonal "tree" pictures available

Grade 2

Unit 2

KEEPERS OF THE LAND

Instructional Area:

Health
Science
Art

Agricultural Concept: Managing a Farm: Caring for Livestock

Objective: Students will learn that animals need protection from the weather.

Introduction: Ask students what they wear outside when it's raining; when it's cold. Do plants need umbrellas? Mittens? How about animals?

Activities:

1. Talk about what farm animals do when it rains. Have students seen animals out in the rain? Do they stay there, stand under trees, go into their holes (e.g., rabbits)? How can animal fur help keep them dry, warm? Think about farmers who raise very expensive horses; would they leave them out in the rain? What do pets do when it rains? Are there "coats" for animals (e.g., horse blankets, doggie sweaters)?

2. Let students select from books and magazines pictures of animals that live where it is very hot (e.g., camels) or very cold (e.g., polar bears). What kind of animals live in the desert? How do they survive? Does someone know what bears do during the winter? Have students draw a picture of an animal that lives in a very hot climate and one that lives in a very cold climate. Or have students make posters of animals using magazine pictures (one poster for those who live in hot climates; one, for cold).

   Then ask students what special things farmers might need to do for their animals when it gets hot here in the summer. Why does snow in the winter here make it hard for the farmer to care for his animals?

3. Are birds able to be out in cold weather? Rain? (Turkeys have to be kept out of the rain, since they will gaze up at it with beaks open and drown.) Do any students know why birds migrate? Is it because of the rain or the cold? If you have them available, bring bird feathers so that children can examine how these protect the birds.

4. Ask students what people do to protect themselves from getting wet? From getting cold? What about getting too hot? Introduce the word shelter as a basic need.

Culminating Activity: Show students pictures of barns and sheds. Have each choose a farm animal and draw a shelter for it.

Materials:

Books and magazines with animal pictures
Samples of feathers

Grade 2
Unit 3

KEEPERS OF THE LAND

Instructional Area: Math
Science

Agricultural Concept: Origin: Plant Growth

Objective: Students will observe the effects various amounts of light and water have on plants.

Introduction: Bring in a houseplant or use a plant in the school. Talk about what makes plants grow. Tell students you're going to do an experiment with plants.

Activities:

1. Conduct two experiments to show the effects of light and of water on plants.

   A. Plant seeds in 3 containers. Put #1 in a place with no sun; #2, in some sun; #3, in full sun. Water as needed. Compare growth.

   B. Plant seeds in 3 other containers. Put all in a setting with good lighting, but give #4 no water; #5, a little water; and #6, adequate water. Compare.

   Help students make graphs to show the results of the two experiments. Point out to students that plants also need nutrients ("food") from the soil to grow. Fertilizer can make the soil richer for plants. Plants need water, light and "food."

2. Bring in 2 "shade plants" of the same variety (ex. fern) and 2 "sun" plants of the same variety (ex. cactus). Place one of each a) away from the sun and b) in direct sun. After 2 days, 5 days, 7 days, compare the state of health of the plants. (Of course, water as needed.) Talk about how not all plants need the exact same amount of light and water. (You can do a similar observation using 2 cacti and 2 ferns and provide one of each with a lot of water, one set with very little, and check the "health" of each.)

Have students examine plant structures. A cactus in the desert, for example, is thick to hold water because of little rainfall; it has a wax-like coating to protect it from the intense sunlight. Plants "fit" their environment.

3. Students can observe a plant taking in water. Put a cut flower (white carnations work well) into dyed water. Watch what happens to the flower.

Culminating Activity: Let students help make a schedule for watering plants in the room and putting them in a good place for light. Or have them check plants around the school or at home to see if plants have enough, too much, too little light and water.

Materials:

Seeds (same variety for all containers)
6 containers of good soil
2 small shade plants; 2 small sun plants

Grade 2

Unit 4

KEEPERS OF THE LAND

Instructional Area: Science

Agricultural Concept: Land Resources/Erosion

Objective: Students will learn what erosion is and at least one way of preventing it.

Introduction: Begin by talking about what happens when there is a heavy rain. Discuss what happens to the water on flat land, hills, pavement, etc. Show students a pan of dry soil and mud and talk about the differences.

Activities:

1. Put soil samples into oblong containers such as cut wax milk cartons. Let students plant grass seeds in some containers while leaving others bare. Allow grass to cover top of soil. Cut one end of the containers down and tilt them so that when students pour a small stream of water across the top any eroded soil can run off into a pan or other container. Have students compare the run-off from the grass-covered container with that from the container of bare soil. Discuss the importance of grass or other cover crops in preventing soil from washing away.

2. Show illustration of sand dunes and tell students they help protect the beach. Ask students which dunes will hold up better, bare ones or those covered with sea oats. Why should people not walk on dunes?

   If you have sand available, you can also set up miniature dunes and experiment with "waves". (Make a "dune" in one end of a pan and filling the pan with about $\frac{1}{2}$ inch of water. Gently use a small, flat stick or ruler to make little waves roll towards the dune end of the pan.)

3. Students can find pictures in magazines of places which have eroded. Display on a bulletin board.

4. Different types of erosion caused by wind, water (rain, rivers, oceans), man cutting trees and removing vegetation, etc., could be discussed. Discuss how local construction affects the land's erosion.

5. To illustrate erosion, place a bar of soap under a faucet. Let the water drip onto the soap in the same spot until it makes a hole or "erodes" the soap away. Have students list areas that might be eroded in this manner and what effects erosion might have.

Cuminating Activity: Walk around the school ground and find examples of eroded soil and covered soil.

Materials:

Grass seeds, soil
2 milk cartons or other containers
Pan of sand
Jug of water
Illustration of sand dunes, some with sea oats
Bar of soap

Grade 2

Unit 5

KEEPERS OF THE LAND

Instructional Area: Science/Health

Agricultural Concept: Marketing: Keeping Food Fresh

Objective: Students will learn ways fruits and vegetables (and other foods) can be "kept fresh."

Introduction: Review seasons. When is fruit picked? If peaches are fresh in August, how can the farmer sell them all at once?

Activities:

1. Ask some students how many different places can we find peaches in the grocery store? (fresh, canned, frozen, dried) In what other ways are peaches used? (jam, frozen peach pie) How about carrots? (fresh, frozen, canned, w/peas, in frozen dinners, carrot juice).

2. How long do fruits and vegetables stay fresh? Let some students set cut and whole samples of South Carolina fruits and vegetables on the science table. With cooperation of the school food service, put another "set" in the freezer in a freezer bag. Three days later examine the fresh and the frozen for appearance. DO NOT TASTE! Explain to students that fruits and vegetables spoil over time. Cooking, canning, freezing, etc., are ways of keeping foods safe to eat for a longer time. Farmers send freshly-picked fruits and vegetables to the market/or processing plant as soon as possible. To go longer distances, they are refrigerated.

3. Have students think of ways other foods are kept longer or preserved (pickles, canned meats). List on the board.

4. Allow children to closely observe the texture of a slice of bread. Tear the bread into two parts. Put one into a closed plastic bag. Leave the other out. The next day have students observe both. The teacher might want to keep both pieces out until mold develops. (DO NOT LET STUDENTS TOUCH OR EAT.)

Culminating Activity: Let students report what kinds of prepared frozen fruits and vegetables (and other foods) they have seen in the store.

Materials:

Samples of fruits, vegetables
A freezer bag
Bread slices/plastic bag

Grade 2

Unit 6

KEEPERS OF THE LAND

Instructional Area: Language Arts/Math

Agricultural Concept: Marketing: Advertising the Product

Objective: Students will learn some basics about supermarket ads.

Introduction: Show students one or more full- or two-page supermarket ads from a current newspaper or flyer and talk about them.

Activities:

1. Talk about the foods in the ad. How many are fresh or "natural"? How many have been processed or changed for marketing?

2. Have students collect ads from papers or from local stores. From newspapers, cut ads and group on board, perhaps by food groups or by fresh/processed.

3. Let students (individually or in pairs) choose a food. They must find a picture of it and think of ways to describe it to make people's "mouths water." Begin by testing some mouth-watering words: e.g., juicy, sweet, plump, spicy. Ask students how ads on TV, in magazines and newspapers make us want to buy products.

4. Put ads on cards and attach to matching pictures. Display ad prices (10¢, 15¢, —easy to add multiples of 5) or use prices already on the ad if appropriate. Let all students have 20 "nickels" and let them "buy" products by leaving the correct amount. See which products have the most buyers.

Culminating Activity: From the ads, let students create a balanced meal.

Materials:

Newspaper ads
Food pictures
Play/money (20 "nickels" per student)
Price cards and ad cards

Grade 2

Unit 7

KEEPERS OF THE LAND

Instructional Area: Language Arts
Science

Agricultural Concept: Managing a Farm: Poultry Farms

Objective: Students will learn about poultry farming.

Introduction: Mark off 21 days on the calendar.
Tell children you're going to learn what can happen on a poultry farm in 21 days.

Activities:

1. Obtain fertile eggs to set in homemade incubator. Explain to children that care must be taken not to disturb eggs. Talk about controlling the temperature, the moisture. Check the temperature and moisture daily; also check to see that the light bulb is burning. Allow children to watch while eggs are turned daily.

2. Show a filmstrip or use books on poultry (see Resource List) and talk about the poultry family: hen, rooster, chick. Let children describe the rooster and the hen. Show male/female pairs of other common farm birds (turkeys, ducks, geese), and let children tell which is which.

   Tell children that poultry farming is a large business in South Carolina. (Most of the corn grown in South Carolina goes to feed chickens.) We have many chickens in the state. They are grown for eggs and for meat. Also we have turkey farms. We even have quail grown in the state and processed here. We eat turkeys and quail.

3. Have children describe a chicken; a turkey. What do they look like? What sounds do they make? What do they eat? How are they alike and different? Have children write sentences about poultry or develop a group composition with the class.

Culminating Activity:

Make bingo cards using poultry vocabulary. (See illustration of bingo card.)

In each square print a vocabulary word. Words to use: chicken, cluck, crow, beak, egg, feather, peck, scratch, poultry, peep, claw, chick, hen, rooster, incubator, hatch, yolk, eggshell, grain, feed. Choose words based on your students' reading abilities. Add in some non-poultry words for variety in calling words. The student will be able to show word recognition by correctly placing markers over the poultry vocabulary word.

Have one student be the caller. He/she calls out a vocabulary word. If the student has the word he covers the answer with a marker. The student with markers in a vertical, horizontal or diagonal row calls "Chick Bingo." The game is over and a new game may begin.

Materials:

Fertile eggs
Incubator made from styrofoam cooler and light bulb (or see 4-H manual)
Thermometer to keep right temperature and open container of water for moisture
Chick bingo (teacher-made) cards, markers

*Note: The 4-H manual (#99) Embryology to Educate has directions for making an incubator. Available from Clemson Extension Service.

Grade 2

Unit 8

KEEPERS OF THE LAND

Instructional Area: Science, Math, Art

Agricultural Concept: Origin: Aquaculture (Catfish Farm)

Objective: Students will recognize that some foods come from special water farms.

Introduction: Who likes fish? Who likes "catfish stew"? Show a picture of a catfish and ask why it was named "catfish". Explain that you are going to learn about catfish farms today.

Activities:

1. Talk about the kinds of farms students know (dairy, cattle, crops, etc.). Ask if they've ever heard of a farm for fish. (In schools using this curriculum, students will have talked a little about fish farms in 1st grade.) Explain that there are water farms for growing fish, crawfish, and shrimp. "Aquaculture" is the term for water farming. The animals live in special ponds.
2. Ask students to estimate (guess): How would you count the fish? How would you decide how much food to give them? How would you know how many baby catfish you had?
3. Have students think of catfish dishes. Let class or small groups write a menu for the "Catfish Cafe." What else goes with catfish for dinner? On the bulletin board, make a picture of a cafe; label it "Catfish Cafe" and post the student menus around it.

Culminating Activity: Let students cut various sizes of catfish out of construction paper and arrange them on a plain sheet of paper to make an attractive design.

Materials:

Picture of catfish
Construction paper

Grade 2

Unit 9

KEEPERS OF THE LAND

Instructional Area: Art/Language Arts

Agricultural Concept: Origin: Products from Trees

Objective: Students will learn commercial uses of tree farms/forests.

Introduction: Show a picture of a Christmas tree. Ask where the tree comes from. Talk about various answers (tree lot; farm; woods; artificial). Tell students there are farms for growing Christmas trees.

Activities:

1. Explain that trees provide beauty and shade. They help protect the earth; they give off oxygen for us to breathe. They provide animal homes. Show several kinds of trees and let children give "describing words" for them. Then let each write 2-3 sentences telling about his/her favorite tree.

2. Tell students we also use trees for many products. Use wood products poster from S.C. Forestry Commission if available and see how many children (a) know (b) are now learning about these products. How many of these do they use? do their families use? Or start a contest to find out how many products come from trees. List products (and pictures if available) on the bulletin board. (Enlist the media specialist's assistance.)

3. Play a forest product "verb" game. Write the alphabet on the board. The student whose turn it is will tell something he/she can do with a tree or a wood product. (Example: I climb a tree.) Scratch out on the board the first letter of the "action" word (c). The next student must use a different letter (Example: I write with a pencil.) and scratch out another letter (w), and so on. Keep products poster in view to help out!

4. Students can make a collage from pictures of items made from trees.

Culminating Activity: Invite a local forester in to talk about growing trees and tree products.

Materials:

Christmas tree and other tree pictures
Wood products poster 83-CFFP-9 (Forestry Commission resources; Resource List in media center)
Collage materials

Grade 2

Unit 10

KEEPERS OF THE LAND

Instructional Area:	Science
Agricultural Concept:	Need: Who Needs the Forest?
Objective:	Children will become aware of the importance of forests to animals.
Introduction:	Ask children to think about why we need the forests. Who lives there? Accept a few responses.

Activities:

1. Use pictures showing (see illustration) animals that live in the woods (raccoons, deer, foxes, opossums, squirrels, rabbits, skunks). Introduce new vocabulary words. On a bulletin board, or on a chalkboard, attach/draw a large tree. Let children attach animals they have drawn to that part of the tree which serves as home (habitat). Talk about the importance of trees to animals (food, protection).

2. Read stories about forest animals and trees such as Smokey Bear's Story of the Forest.

3. Have children bring in leaves from home. Press the leaves using absorbent paper on each side for about 2 days to a week. Discuss types of leaves/trees and their characteristics. Have students write a story about their leaves/trees and characteristics. The leaves may be laminated or covered with clear contact paper and used for bookmarks or a bulletin board display. Have children talk about which birds/mammals live in trees.

Grade 2

Unit 10, cont.

Culminating Activity: Have children draw a picture of the forest and some of the animals who live there or do a finger painting of the forest.

Materials:

Illustration
Poster board/drawing paper/crayons
Books about the forest (see Resource List)
Contact paper or laminating film
Contact Forestry Commission for Smokey the Bear booklets and related activities. (Address on Resource List)

Grade 2

Unit 11

KEEPERS OF THE LAND

Instructional Area: Health
Art
Math

Agricultural Concept: Need: Why We Need Foods

Objective: Students will learn why we need vegetables for good health.

Introduction: Ask if students know why we need both green and yellow vegetables. (Food groups are often introduced by 2nd grade.) Why are carrots and spinach both part of the same food "group"?

Activities:

1. List on the board (as students name them) green vegetables and yellow vegetables. Then ask how many students like each item, recording the vote. Let students total the votes and determine the "winner" of the Vegetable Popularity Poll. Now make a third list of other vegetables (e.g., beets, potatoes). Explain to students that is is important to eat all kinds of vegetables, even though we like certain ones more than others.

2. Now let students help you mark which vegetables grow above the ground (beans, okra), right on the ground (lettuce, spinach), and below the ground (carrots, potatoes, beets). Next let students write on a sheet of paper their own 4-6 favorite vegetables. Next they will count how many "above ground", how many "on the ground," and how many "underground" vegetables they have on their lists. If someone has mostly "above the ground," he/she belongs to the "flyers"; on the ground, the "plowers," and underground, the "miners."

You could instead teach students that vegetables come from different parts of the plant: stems (celery, asparagus); leaves, and roots. Note to teacher: We call some fruits "vegetables" (squash, beans, okra, peas, etc.) All of these develop from the plant flower and carry seeds. This distinction is not necessary in this lesson.

3. If you can obtain leaves or vegetable plants (carrots with tops, a piece of plant with pea pods, etc.) bring several to class, arrange them so that an overhead or other light throws the shadow on a plain wall; have students draw silhouettes. Or cast the shadows on a large light-colored or white bulletin board and let students do a vegetable shadow mural.

   If these plants are not available to you, bring vegetables and let students arrange vegetable slices, cubes, etc. in a geometric design.

Culminating Activity

Let students create a vegetable man. You may even want a panel of judges to award 1st, 2nd, and 3rd prize to the best vegetable people. Review importance of vegetables to good health.

Materials:

Health textbook
Vegetable plants/leaves
Vegetable pieces and whole vegetables
Overhead projector

Grade 2

Unit 12

KEEPERS OF THE LAND

Instructional Area: Science
Language Arts

Agricultural Concept: Origin: Where Foods Come From: Review

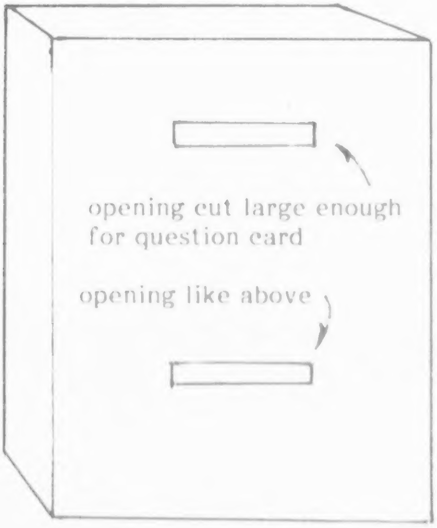
Lesson Objective: Students will review sources of various farm/forest/ocean products.

Introduction: Let students make up questions to be put on cards that will fit the milk carton computer (see diagram below). Questions will be on one side, answers on the "flip" side. (ex. Where does bacon come from? Hog) They should keep their questions a secret from other students. You may want to give each one a "quota" (e.g., 5 questions each) or let them have a certain time limit (10 minutes) to think of "really good questions." The teacher should edit, sift out duplications, and arrange questions in order from easy to difficult.

Activity: Make a milk computer carton according to the diagram below. Then choose teams for a competitive game. Let groups decide answer rather than calling on individuals.

Culminating Activity: Provide samples of food products and other farm products for students to observe and touch.

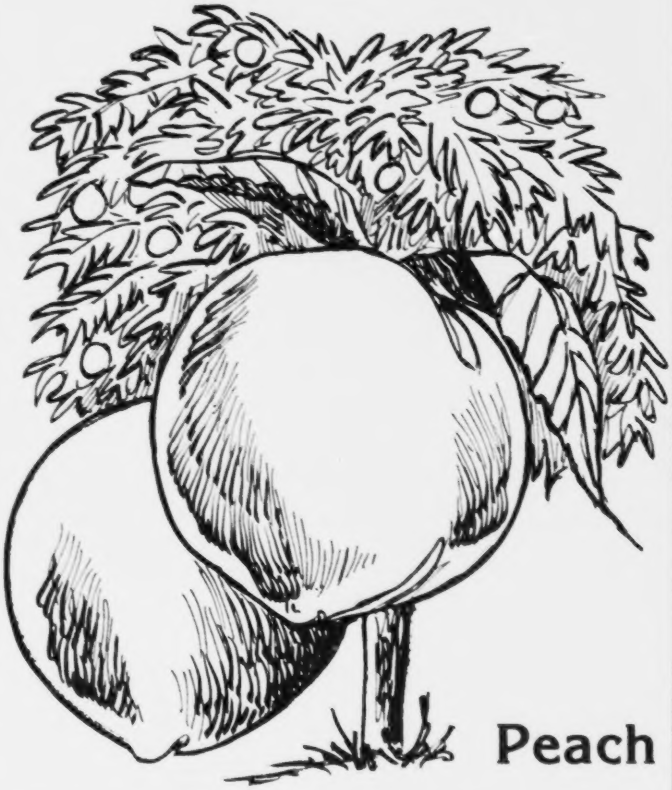
Diagram: Cut cards large enough to fit from slot to slot, making sure they have a slight curve. The curve allows the answer card to slide from the top opening and come out the bottom. For answer card, put the question on the front. Flip question card over end on end and place the answer on the bottom of the card.



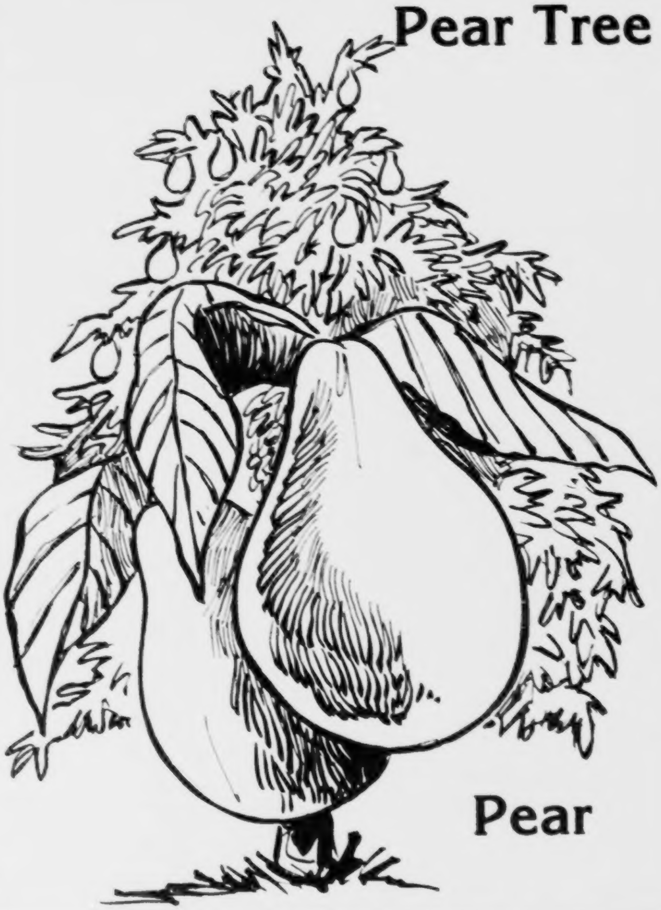
Sample card

Question
Answer
Front
Back

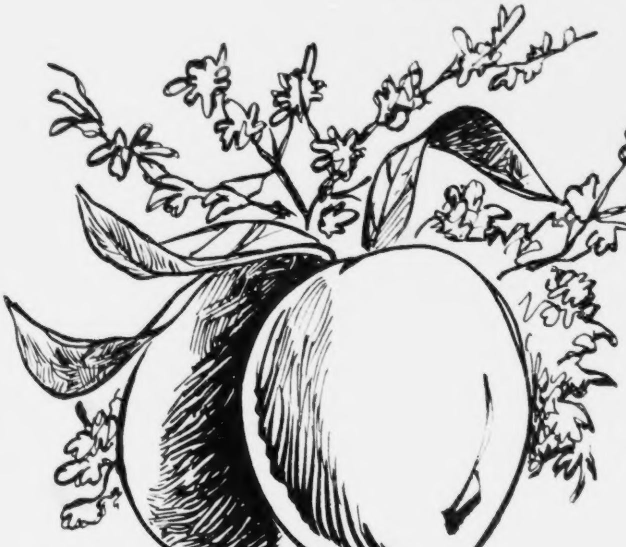
Peach Tree



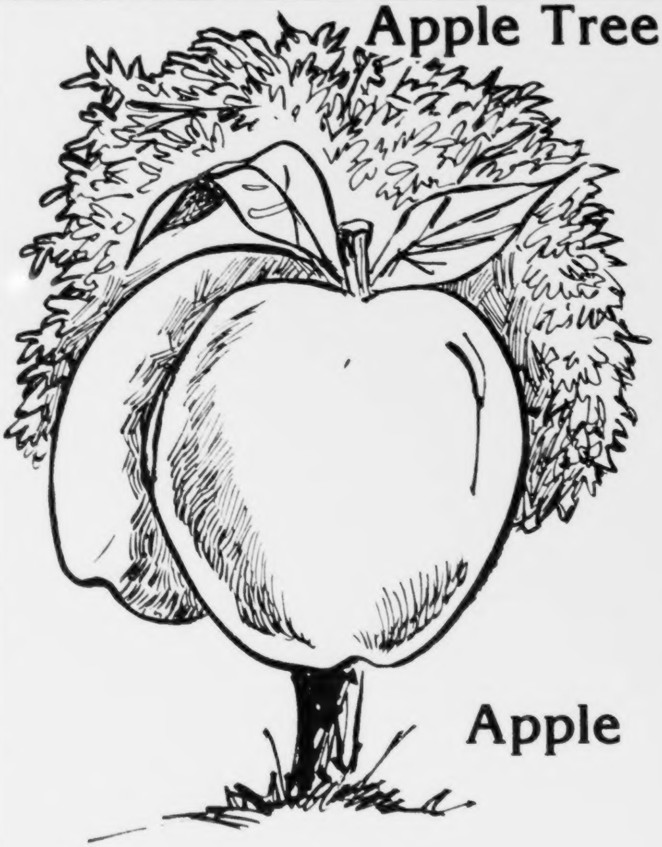
Pear Tree

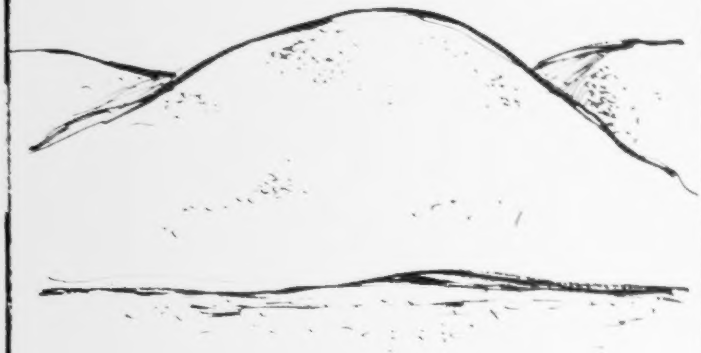


Plum Tree

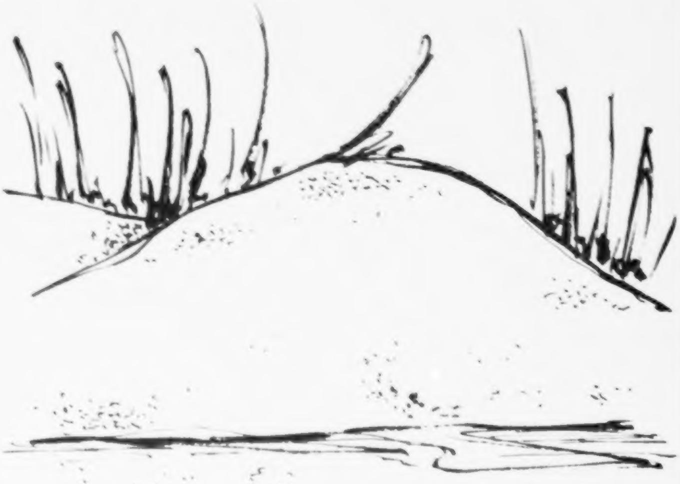


Apple Tree

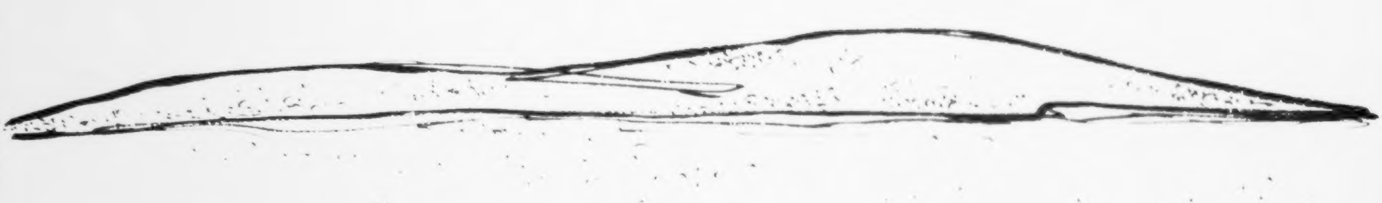




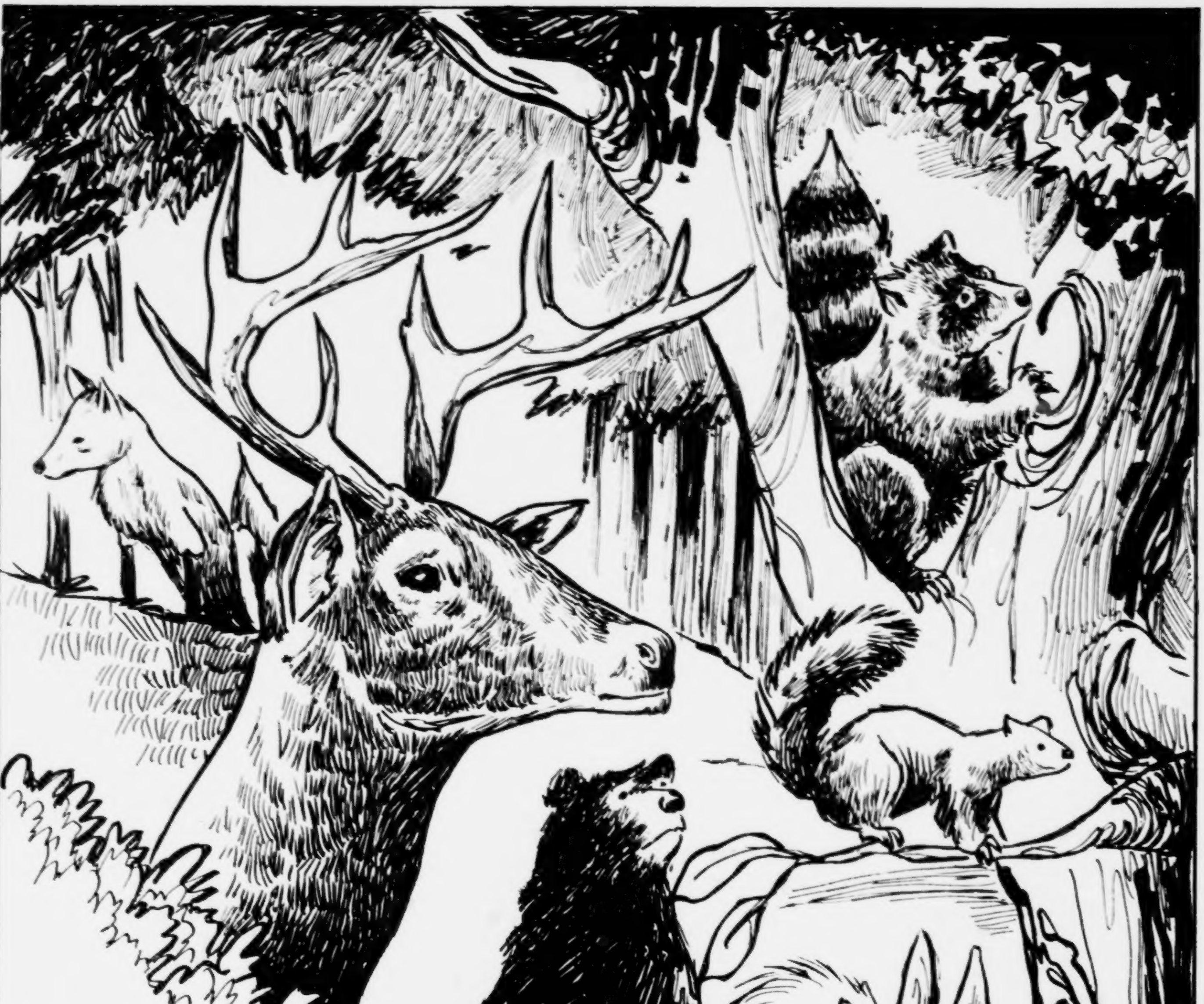
Sand Dune



Sea Oats



Eroded Beach



KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers
and the Curriculum Section
of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

Third Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society." **Why Agriculture Is So Important**
Ag in the Classroom
United States Department of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

S. C. Department of Agriculture
Dr. Richard H. Jesse
Peggie L. Davis

Forestry Commission
Rhett Bickley

Water Resources Commission
Chris Brooks
Danny L. Johnson

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

Clemson Extension Marine Research
Jack Whetstone

Land Resources Commission
John W. Parris
Cary Chamblee
Charles Logan
Von Snelgrove

Wildlife and Marine Resources Department
Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

THIRD GRADE

TABLE OF CONTENTS

Unit I: Origin: Planting Cycle: Seasons
Science; Language Arts; Math

Unit II: Management: Land Use: Types of Soil
Social Studies; Science; Language Arts

Unit III: Management: Water Use
Language Arts; Environmental Education

Unit IV: Management: Tobacco and Other Row Crops
Mathematics; Language Arts

Unit V: Management: How Trees Grow
Language Arts; Mathematics

Unit VI: Marketing: Changing a Natural Product for Market: Forest Products
Social Studies; Art

Unit VII: Origin: Cotton
Marketing: From the Plant to Products
Language Arts; Science; Art

Unit VIII: Origin: Aquaculture/Mariculture
Art; Language Arts

Unit IX: Management: Daily Tasks at a Dairy
Language Arts; Art; Science

Unit X: Need: The Agriculture Industry in South Carolina
Social Studies; Language Arts; Math

Unit XI: Management: The Farmer's Role
Social Studies; Music; Language Arts

Unit XII: Need: Festivals Celebrating Agriculture
Marketing: Festivals Celebrating Agriculture
Social Studies; Language Arts; Physical Education

NOTE: **An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6).**

ILLUSTRATIONS INCLUDED

3-1 Planting cycle
3-4 Tobacco Plant
3-5 Tree Growth
3-7 Cotton
3-10 Outline map of S. C.

Grade 3

Unit 1

KEEPERS OF THE LAND

Instructional Area: Science/Language Arts/Math

Agricultural Concept: Origin: Planting Cycle

Objective: Students will recognize the planting cycle and the effects of the seasons.

Introduction: Bring in a leaf, bud, or twig depending on the time of the year. Talk to students about plants growing and changing as children do. Ask individuals to name the seasons.

Activities:

1. Discuss with students the process (cycle) of planting crops. The farmer must prepare the soil, plant the crop, tend it as it grows (irrigate, apply pesticides, and fertilizers, etc.), and harvest the crop. (See illustrations of each phase.) As you explain the cycle, have students draw each phase on a separate piece of paper. (Each student will later compile a booklet with their illustrations.)

2. Place white half runner string beans (common bean variety) in gallon milk jugs. The beans can be harvested in about six weeks.

3. After six weeks, place half the plants in the freezer. Let the other half continue growing. Compare findings and chart. (The chart could show growth or color variations.)

4. Once or twice during the year have a farmer come to the class and talk about what is happening on the farm at that time. Slide presentations can provide opportunities for children to see changes in the planting cycle.

Culminating Activity: Students develop a mural based on the planting cycle on one kind of farm.

Materials:

Illustrations
Half-runner beans, milk jugs, fertilizer (10-10-10)
Drawing paper/crayons
Paper and paints/crayons for mural

Grade 3

Unit 2

KEEPERS OF THE LAND

Instructional Area: Social Studies/Science
Language Arts

Agricultural Concept: Management: Land Use: Types of Soils

Objective: Students will recognize that land has many uses and that land once available for agriculture is now used in other ways. Students will also recognize the major types of soils and their characteristics.

Introduction: Ask students to think about how we use land. Write their responses on the board.

Activities:

1. Tour the school grounds to determine how the land is being used (school building's setting, playground, parking lot, flowers and shrubs, etc.). When the class returns, make a large map of the school grounds and illustrate land uses with appropriate symbols.

2. Have students observe ways in which land is being used in their community or city. Have students name some of the uses of land. (Uses: crops, forests, cattle grazing, buildings, roads, parking lots, recreation, parks, wildlife homes). Discuss loss of land for agriculture and wildlife.

   Follow-up: Tell students to observe land use on the way home. The next day give each student a yes and a no card. If the student saw that use on the way home he/she holds up yes; if not, he/she holds up no. (Teacher might prefer hand signals.)

3. Bring in three pots of different kinds of soil-clay, sand, loam. (Loam is a mixture of sand, clay and silt; it is a desirable soil for growing things.) Display the soil samples. Tell students the names and the types of soil and label them. Let students observe the samples, comparing them on color, and texture. (Be sure to introduce the word soil.)

4. Fill 3 large juice cans half full with the 3 types of soil (clay, sand, loam). Both ends should be removed from the cans. Wire screen should be secured over the bottoms of the cans to hold the soil but allow water to percolate. Pour the same amount of water slowly through each can. Catch the water which drains through each can in a catch basin. Measure the amounts in the three catch basins. Which soil holds the most water? (Clay)

5. Plant (a) seed(s) in each type of soil. Care for seedlings under identical conditions. Which soil is best for growing seedlings? (Loam) What kind of land should we use for farms? (Our best soil for growing things)

Culminating Activity: Ask students why soil is important. Why is it important to keep land with good soil in use as farms?

Materials:

Sets of yes - no cards
Large sheet of paper/markers for group map
3 soil samples (sand, clay, loam)
3 pots and seeds
3 juice cans, 3 basins, and wire screen

Grade 3

Unit 3

KEEPERS OF THE LAND

Instructional Area: Language Arts
Environmental Education

Agricultural Concept: Management: Using Water Effectively

Objective: Students will learn how water is managed to get the best usage.

Introduction: Ask students how we get water in our homes (wells or city water). Lead them to see that water is not "free."

Activities:

1. Ask students if they know which uses more water, the shower or the bathtub. (tub) They might perform an experiment at home by taking a shower with the drain stopped and comparing the amount used to a bath.

2. If there were a water shortage, which uses would students say were most important: drinking water for people; drinking water for farm animals; drinking water for pets; watering the flowers; watering crops; watering the lawn; bathing the children; bathing the adults; bathing the pet puppy; bathing the cow; washing the new car; playing in the sprinkler/home pool. Have students vote on the five most important.

3. Introduce the word drought. Talk with students about drought around the world. Why do farmers in South Carolina worry about drought?

4. On a map of South Carolina, show where major dams are found. Discuss with them why dams are built. Discuss what kind of land should not be covered with a lake (e.g., prime farm land). Discuss how a dam could help farmers irrigate; would it matter where the farmer lived (above or below the dam)? Students might build a small model dam, lake, etc.

5. Show children pictures of irrigation methods. Conduct a brief experiment:

   Does more water come out when the faucet is on full? Let students see how quickly a faucet will fill up a jar (wide-mouthed) of water. Now leave the faucet closed so that water just drips out. Leave a few minutes and let students measure how much water has dripped. Tell students about drip trickle irrigation that is used in South Carolina. (Embedded hoses let water just trickle in a constant drip right at the roots of plants.) Would this method save water? How do they know? (They have just measured.)

Culminating Activity:

Let students draw a picture of one way to save water at home. Let them write a sentence or paragraph about it.

Materials:

Map of South Carolina
Materials to build small model dam
Wide-mouthed jar/measuring cup
Pictures of irrigation methods

Grade 3

Unit 4

KEEPERS OF THE LAND

Instructional Area: Mathematics
Language Arts

Agricultural Concept: Management: Tobacco and Other Row Crops

Objective: Students will learn that tobacco farmers (and other farmers) use mathematics in many ways.

Introduction: Have students think about how farmers might use mathematics. Write student responses on the board. Tell students they are going to learn about tobacco (row crop) farming and mathematics.

Activities:

1. Share with students some general information from the encyclopedia about tobacco farming (setting the plants, tobacco pests, harvesting, curing). Show them the illustration of a tobacco plant. Have each student write several sentences about what is most interesting to them in tobacco farming. You might choose another row crop (soybeans, corn, etc.) also.

2. Present students with a variety of mathematics problems, using tobacco or other row crops.

   a. Geometry/Measurement - If real tobacco leaves are available, have students examine their lines of symmetry. Also have them estimate the length of the leaves (real or paper ones) and then measure them.

      Have students draw tobacco leaves. Have them illustrate similar pairs of leaves and then congruent pairs.

   b. Concepts -
      (1). Have students look at a tobacco field drawn on the board. The farmer has planted tobacco in the shaded part. What part is planted? (thirds through twelfths)

2. b. Concepts, cont.

(2). Have students look at a bar graph on the board. Ask them: Which farmer grew the most tobacco? Which grew the least? Use a graph with Farmers A-C identified.

c. Operations - Develop subtraction problems (maximum of 3 digits and 2 regroupings). Put the problems on cards shaped like tobacco leaves or cotton bolls. Make them self-checking.

d. Problem-solving - Students read these problems.

(1). Tobacco is selling for $2 a pound. A farmer has 732 pounds. How much can he get for the tobacco? (Advanced level)

(2). Tomatoes cost 40¢ a pound to pick your own. You want to pick 2 pounds. How much money do you need?

Culminating Activity: Divide students into groups. Have each group write an original word problem about tobacco farming or row farming in general.

Materials:

Tobacco leaves
Cards shaped like cotton bolls or tobacco leaves

Grade 3

Unit 5

KEEPERS OF THE LAND

Instructional Area:
Language Arts
Mathematics

Agricultural Concept: Management: How Trees Grow

Objective: Students will learn about tree growth and its measurement.

Introduction: Read aloud Joyce Kilmer's poem "Trees" ("I think that I shall never see/A poem lovely as a tree"). Let students tell what they like best about trees.

Activities:

1. Review how to use a tape measure. Then go outside and let students measure a tree. Talk about what you measure (trunks' circumferences). Ask why we don't measure trees the same way we measure people. Let everyone measure a given tree and see how many agree. Or, make a team game by marking several trees beforehand with number cards. Give each team a paper with numbers by which they will write each tree's measurements. The most accurate team wins.

2. Let students measure other trees with hand spans or pieces of string and record their estimates. Then let them actually measure the trees (or shorten the activity by giving them correct measurements). Let them put the correct answers to the right of their estimates. Be sure to let those "way off" re-measure the tree with a tape measure.

3. Discuss the relationship between trunk size and tree age. Show students a crosscut (real, pictured, or drawn) that shows "growth rings." Talk about how long it takes to grow a tree. See illustration. (Introduce the word sapling)

4. Let #3 lead into what happens to forest animals who lose their homes through fire or land clearing. (e.g., Smokey the Bear). Introduce "Who's in the tree?" Let each student use modeling clay to fashion a tree-dwelling animal and attach it/set it/mount it on a branch or twig. Display these in the room or elsewhere around the school. (With this activity, focus on how much time it takes to grow a forest home for these animals.)

5. Let students choose one or more of the following:
    a. Write an expository composition explaining how to plant a tree.
    b. Write a paragraph describing a tree.
    c. What if there were no more trees on earth? What would happen?

Culminating Activity: Share compositions of volunteers orally.

Materials:

Joyce Kilmer's poem
Measuring tapes; also string
Number cards and answer sheets (see #1 above)
Illustration to show "growth rings"
 and stages of sapling growth
Modeling clay
Encyclopedias

Grade 3

Unit 6

KEEPERS OF THE LAND

Instructional Area: Social Studies
Art

Agricultural Concept: Marketing: Changing a Natural Product for Market

Objective: Students will learn about South Carolina wood products and industries that process wood.

Introduction: On the bulletin board have a leafless tree named "The Wonderful Tree." Let students look through old magazines and cut out wood and paper products, (e.g., furniture, paper products, newspapers, 45" records, pencils...); mount them on construction paper "leaves" and pin to tree.

1. On a map of South Carolina, show students where the S.C. forests are. Put a colored pin where major industries of wood/paper products are located (e.g., International Paper Mill in Georgetown, Union Camp in Sumter, etc.). Let students write 2-3 sentences about which of the different wood-related industries they would prefer to work in and why.

2. If possible, have small wood samples of 4-5 South Carolina woods (pine, oak, cypress, palmetto). Talk about how Indians and early settlers used wood. You might show a picture of a cypress dug-out used by SC Indians.

3. Allow children to build homes, chairs, etc., out of toothpicks/popsicle sticks/tongue depressors. Discuss the similarities between wood use in pioneer times and the wood product furniture they are making.

4. Let students use pastels or watercolors to paint their favorite tree, as "lifelike" in terms of shape, leaves, bark, color as possible.

5. Have children "plant" a newly sharpened pencil in a box. Discuss the pencil as a non-living product. Take the children outside and compare the planted pencil to a tree. Discuss the process a tree goes through to become a pencil.

Culminating Activity: Have children recall as many wood products as they can. List them on the board.

Materials:

Map of South Carolina
Bulletin board paper
Wood samples
Toothpicks/popsicle sticks/tongue depressors
Construction paper
Pastels, watercolors
Shoe box, sharpened pencils, soil

Grade 3

Unit 7

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Science
Art

Agricultural Concept:

Origin: Cotton
Marketing: From the Plant to Products

Objective:

Students will trace the different stages of cotton production and its different forms.

Introduction:

Give each child a piece of cotton with seeds in it to feel. Display an article made of 100% cotton and ask for similiarities and differences. Discuss.

Activities:

1. Talk about the planting and growing of cotton in South Carolina. Show the students the plant, blooms, bolls. (See illustration.) If available, use real cotton plants or a filmstrip.

2. With the aid of the teacher students will research the different stages of cotton production. Set up a display of the different stages. A combination of pictures and real materials (as available) might be used. (Planting, the cotton plant blooming, the full bolls, a picture of a cotton picker, unginned cotton, ginned cotton, a few cotton by-products, cotton products) Simulate a field trip through the display, having students tell about the various stages. Each student chooses his favorite part of the field trip and writes a paragraph about it. Collect the paragraphs into a class booklet.

3. Have students inventory cotton products in their homes. After they bring their lists to class, have students in groups make collages of pictures of things that have cotton in them.

Culminating Activity:

Take a real field trip to a cotton field/gin or have a cotton farmer talk to the class.

Grade 3

Unit 7, cont.

Materials:

- Illustration
- Filmstrip (if available)
- Cotton seed
- Cotton plant with flowers and bolls
- Unginned cotton
- Ginned cotton
- Cotton by-products (lint, cottonseed, cottonseed oil, cottonseed cake-meal, linters, as available)

Resource: The Story of Cotton resource kit (booklet, samples, filmstrip) from National Cotton Council or similar materials. (See Resource List in media center.)

***Note:** This activity is most appropriate when a blooming cotton plant is available. Otherwise, use pictures or filmstrip.

Grade 3

Unit 8

KEEPERS OF THE LAND

Instructional Area:

Art
Language Arts

Agricultural Concept:

Origin: Aquaculture/Mariculture

Objective:

Students will identify animals raised on water farms and will categorize them into freshwater or saltwater habitat.

Introduction:

Mystery words: The day before the lesson, put the words scallop, crawfish, catfish, and oyster on the board. Tell students that tomorrow you will solve the mystery of what's alike about those words. If anyone knows the answer, keep it a secret.

Activities:

1. Explain to students that we have always caught or gathered food from ponds, lakes, rivers, and the sea. Now we have water farming. Instead of catching animals only in their natural habitat, we have special water farms to grow some kinds of fish/animals. Explain the terms aquaculture (water farming) and mariculture (saltwater farming). Discuss the kinds of animals that would be farmed in both. Show pictures of various animals; ask who has eaten them before.

2. Learning Center:

   Draw 2 bodies of water (ponds) and label them "fresh water" and "salt water". Put pockets in both ponds. Students then put shapes that can be classifed as saltwater farming in the pocket of the mariculture pond (answers on back of picture to make activity self checking) or freshwater farming in the pocket of that pond.

3. Have classroom aquarium if possible. (It can be fresh or brackish; discuss the difference.) Choose appropriate fish for the kinds of water.

4. Enlist the aid of the media specialist in setting up a book table about fish, the ocean and sea life. The teacher and class might bring shells, seaweed, etc., to add to the table and to examine and discuss.

5. Make a sea animal mobile.

Culminating Activity: Students make a torn-paper collage of water creatures.

Materials:

2 laminated ponds made from poster board
Shapes made from construction paper
Aquarium
Books
Shells
Coathangers
String
Drawings or pictures of sea animals
Paper/glue

Grade 3
Unit 9

KEEPERS OF THE LAND

Instructional Area: Language Arts/Art
Science

Agricultural Concept: Management: Daily Tasks at a Dairy

Objective: Students will learn important facts about dairy farming.

Introduction: Ask each student to write down some of the tasks he/she does every day (gets ready for school, eats lunch, has reading time, goes to recess, takes care of little brother/sister). Tell them that on a dairy there are tasks that have to be done, too.

Activities:

1. If possible, invite a dairy farmer to speak to the class. Otherwise, show a filmstrip or read to students about dairy farming. (See Resource List.)

2. After students have been exposed to dairy farming, divide the class into 2 groups and play "Dairy Trivia." Each team will be given cards with different questions on them; e.g., "Where are cows milked?" (answers on the back) Teams alternate asking each other questions. A point is given for every correct answer. The following facts should be included in the teacher-made questions:
    Cows must be milked in the early morning and late afternoon.
    Cows and calves are fed grain, barley, wheat, soybeans, alfalfa hay, silage.
    Cows need shelter from bad weather, hot sun, cold.
    Farmers measure milk in pounds.
    The consumer buys milk in half-pints, pints, gallons, quarts.
    There are many kinds of milk.
    Milk must be protected from germs and dirt.
    Milk must be kept cool.
    Milk has to be kept refrigerated from farm to market.
    Cows need to be vaccinated.
    There are many vitamins in milk.

2. Teacher and students will summarize this activity by making a chart. "Important Facts About Dairy Farming." Selected details can be written on the chart.

3. Leave a carton of milk out on the window sill. Allow children to see (but not taste) the changes in milk. Lead into a discussion on the need for refrigeration from farm to market.

Culminating Activity: Make a model of a dairy farm from clay or plastic/rubber animals, buildings, and equipment (available at variety stores and school supply houses)

Materials:

Filmstrip/books
Trivia cards
Chart paper
Carton of milk
Clay or plastic/rubber animals, buildings, equipment

Grade 3

Unit 10

KEEPERS OF THE LAND

Instructional Area: Social Studies
Language Arts
Math

Agricultural Concept: Need: The Agriculture Industry in S. C.

Objective: Students will explain the importance of agriculture to our state.

Introduction: Students will use the newspaper to identify and list crops grown in South Carolina. Write on the board the crops identified and indicate on a map of the state where they most likely grow.

Activities:

1. On an outline map of South Carolina given to each student, let each draw symbols for the major South Carolina crops and indicate where the crops are grown. Students will create their own symbols and explain them to the class. Finally, they will make a map key explaining the symbols.

2. Label for the children which vegetables/fruits grow natively here and which were brought in by others. (The teacher might talk about what Indians and early settlers planted and ate.) Then let students choose one food from each list and compare them. Students may compare what they choose (history, look, taste, value, preference), but each sentence must contain a different comparison.

3. Let students look through newspapers for prices of different produce groups (meats; vegetables; fruits). Let them compare prices and determine which meat, vegetable, fruit seems the best buy. Then let them plan one expensive dinner and one bargain dinner, all with South Carolina produce.

4. Give each child a $20 budget and see how much he/she could buy with it at the supermarket.

5. Have students pretend there are no more farms or farmers in South Carolina. Have them discuss problems that would result and probable solutions. Have students write paragraphs about one problem and a solution.

Culminating Activity: To the tune of "The Farmer in the Dell," let students learn the following song and let them identify the rhyming words in it:

Farmers are the best,
They're better than the best,
And in South Carolina
They're better than the rest.

They work very hard
Every day of the week,
And they want you to know
It's respect that they seek.

They get up in the morning
And work until the night
Because they have a special job
And they want to do it right.

So everyone please listen,
Listen carefully to me,
If we didn't have our farmers,
Where in the world would we be?

You could enhance the song with a puppet production of farmer hand puppets and close with a chorus singing the song.

Materials:
Map of South Carolina
Newspapers with supermarket ads
Materials for hand puppets if you wish

Grade 3

Unit 11

KEEPERS OF THE LAND

Instructional Area: Social Studies
Music
Language Arts

Agricultural Concept: Management: The Farmer's Role

Objective: Students will understand the importance of farmers and why we need them.

Introduction: Ask how many students know a farmer. What kind of farm does he/she have?

Activities:

1. Play a "What if?" game. Teacher asks a "What if?" question. Ex.: What if we did not have any more dairy farmers? What if we only had half the farmers we have now? What if (name of local farmer's) farm became a shopping mall?
2. Sing the song "Plant It!" Students may want to record it. Or have students make up their own song.
3. Have students write a short composition on the role of the farmer.
4. Have a farmer come in and speak to the class.
5. Role play the various kinds of farmers without identifying them. Allow children to determine the type of farmer (egg, poultry, meat, dairy, beef cattle, tobacco, tree, horse, etc.)

Culminating Activity: Have students make a tape recording telling why we need farmers. The class can divide into small groups; a representative from each group can record the group's response.

Materials: Song: "Plant It" (Tune: "Beat It")

Plant It

Farmers know they always have to work
hard day and night;
Don't want to lose their farm;
they better do it right.
It's not an easy job so they have to
be bright,
To plant it, just plant it.

They irrigate, they surely do it if
they must,
Don't want to see a pest, so they
often dust.
They have our respect, and they also
have our trust,
To plant it, just plant it.

Chorus:

Plant it, plant it!
As long as they keep planting
our food,
We know they work hard seven
days and nights,
And they're smart cause they
do it right.
So plant it, plant it!

Tape recorder

(written by a South Carolina teacher on the committee)

Resource: Local Farm Bureau

Grade 3

Unit 12

KEEPERS OF THE LAND

Instructional Area:

Social Studies
Language Arts
Physical Education

Agricultural Concept:

Need: Festivals/Fairs Celebrating Agriculture
Marketing: Festivals/Fairs Celebrating Agriculture

Objective:

Students will learn about the variety of festivals throughout the state which celebrate agriculture and about agricultural exhibits at county/state fairs.

Introduction:

If your (or a neighboring) community has a festival, ask how many students have been to it. Talk about what food/crop the festival celebrates, what kind of activites it offers, etc. If students have not been to a festival, talk about a fair or similar community function they can relate to the festival discussion.

Activities:

1. Begin by talking to children about some of the more popular festivals around the state. Show them pictures, newspaper clippings, samples of the product celebrated. Talk about why we have these festivals. Have children expand the class list of festivals by asking parents, teachers, the librarian for information about other festivals. Post festival names on a bulletin board with pictures of the products.

2. Have students choose a favorite festival to "research." They might study the crop, locate on the map of South Carolina where the festival is held, etc. Students then write one or two paragraphs about their crop/festival (depending on student ability).

3. Have the class choose an agricultural product (not currently honored) to recognize with a festival and name the festival. Divide into small groups to:

   (a) design a simple logo (illustration, title of festival)
   (b) think of kinds of activities to have (parade, food booths, crafts, performers, contests)
   (c) select games to play at the festival (egg toss, egg spoon race, fitness walk, apple peeling, cucumber stacking, watermelon eating)

4. Select (a) game(s) involving physical activity for the class to play at recess.

5. When county/state fair time comes, ask students to find out what fair activities celebrate agriculture. Have them write brief compositions about their experiences viewing agricultural exhibits. Have any 4-H students tell about the projects.

Culminating Activity: In a large group, have students summarize with you what agricultural festivals are and why we have them.

Materials: Pictures, newspaper clippings, products, and other information about festivals

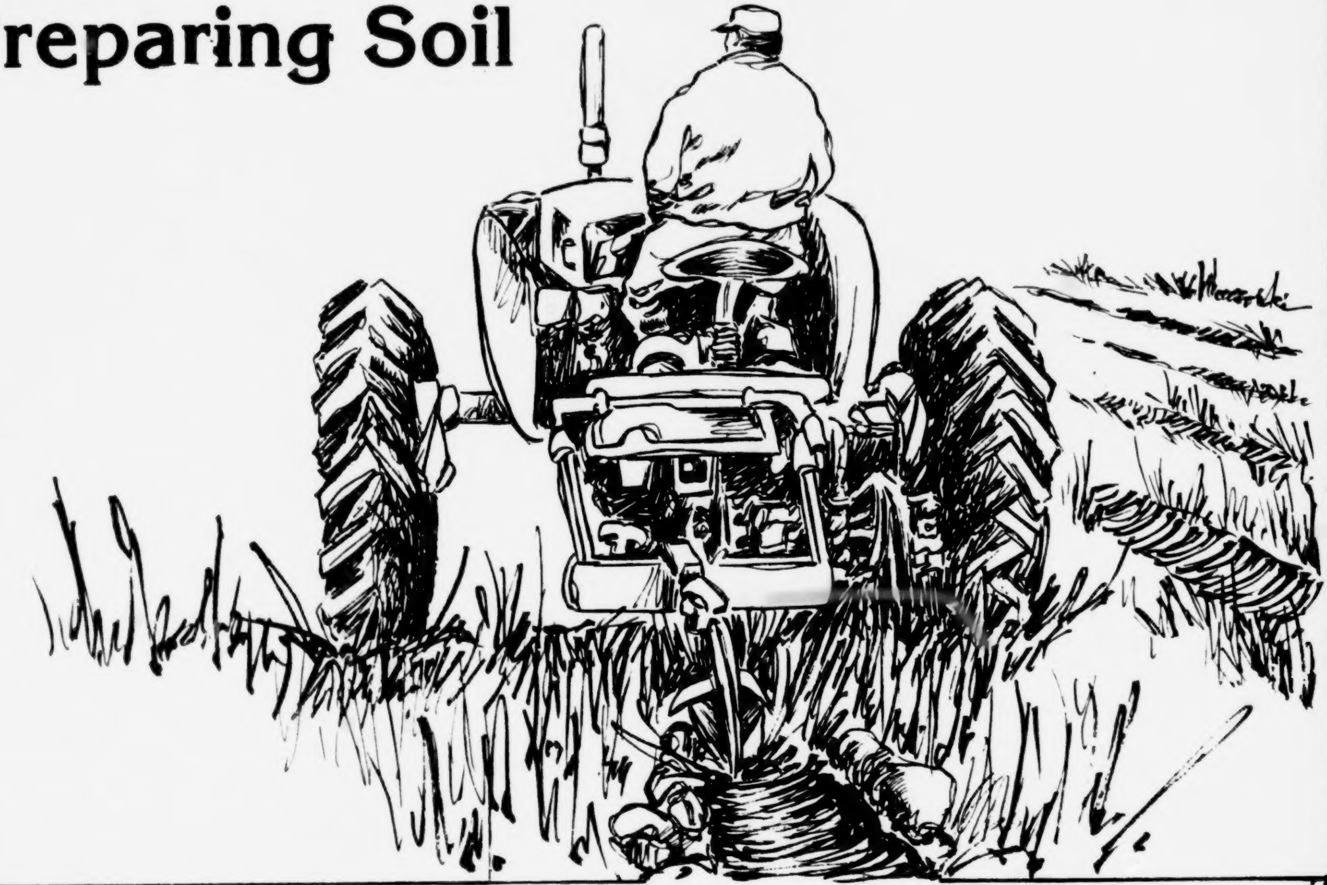
Map of South Carolina
Festival information
Materials for selected games

Resources: Information would be able from the agency or community sponsoring the festival.

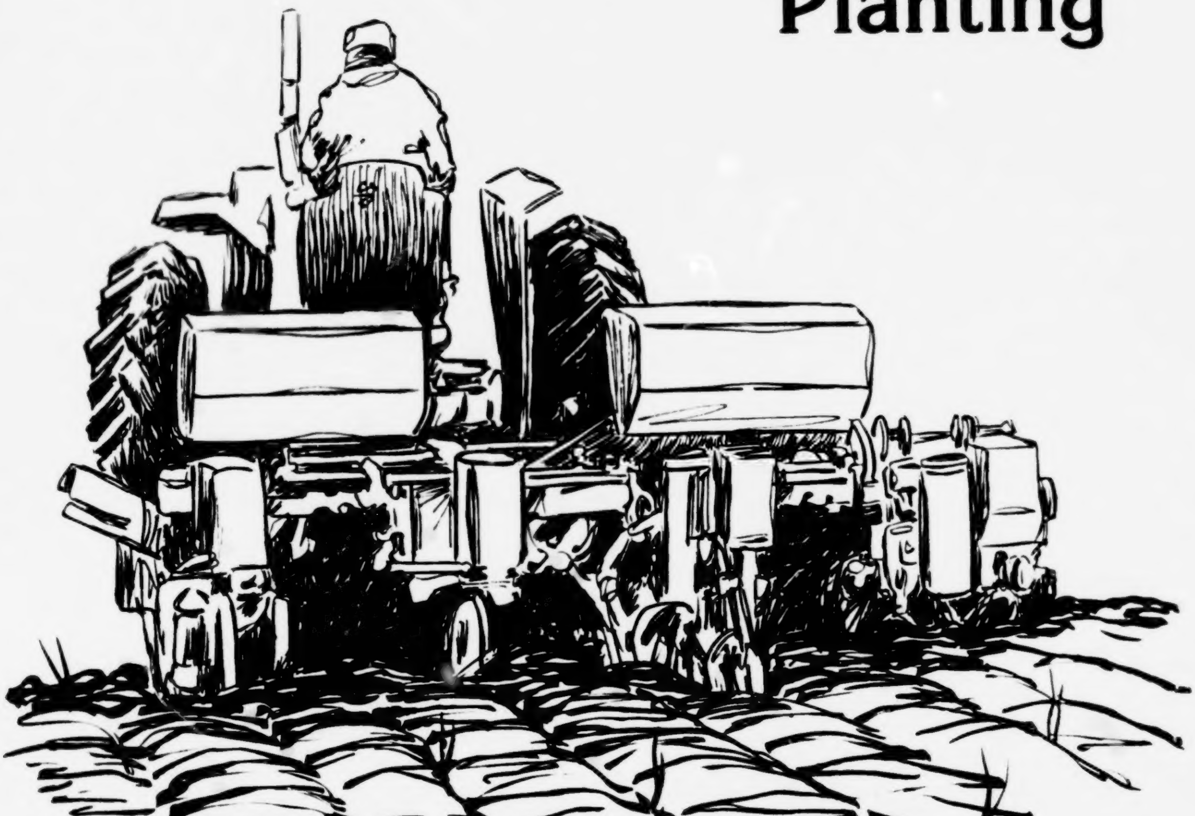
South Carolina Department of Parks,
Recreation, and Tourism and
South Carolina Festival Associations
(See addresses on Resource List.)

A few other festivals:
- Newberry Dairy & Egg Festival
- Pelion Peanut Party
- Darlington Sweet Potato Festival
- South Carolina Department of Agriculture Food Festival (Columbia Farmer's Market)
- Pee Dee Jamboree and Pee Dee Fall Harvest Jamboree
- Watermelon Festival
- Elgin Catfish Stomp
- Okra Strut
- Peach Festival
- Cotton Festival
- Egg Scramble Jubilee

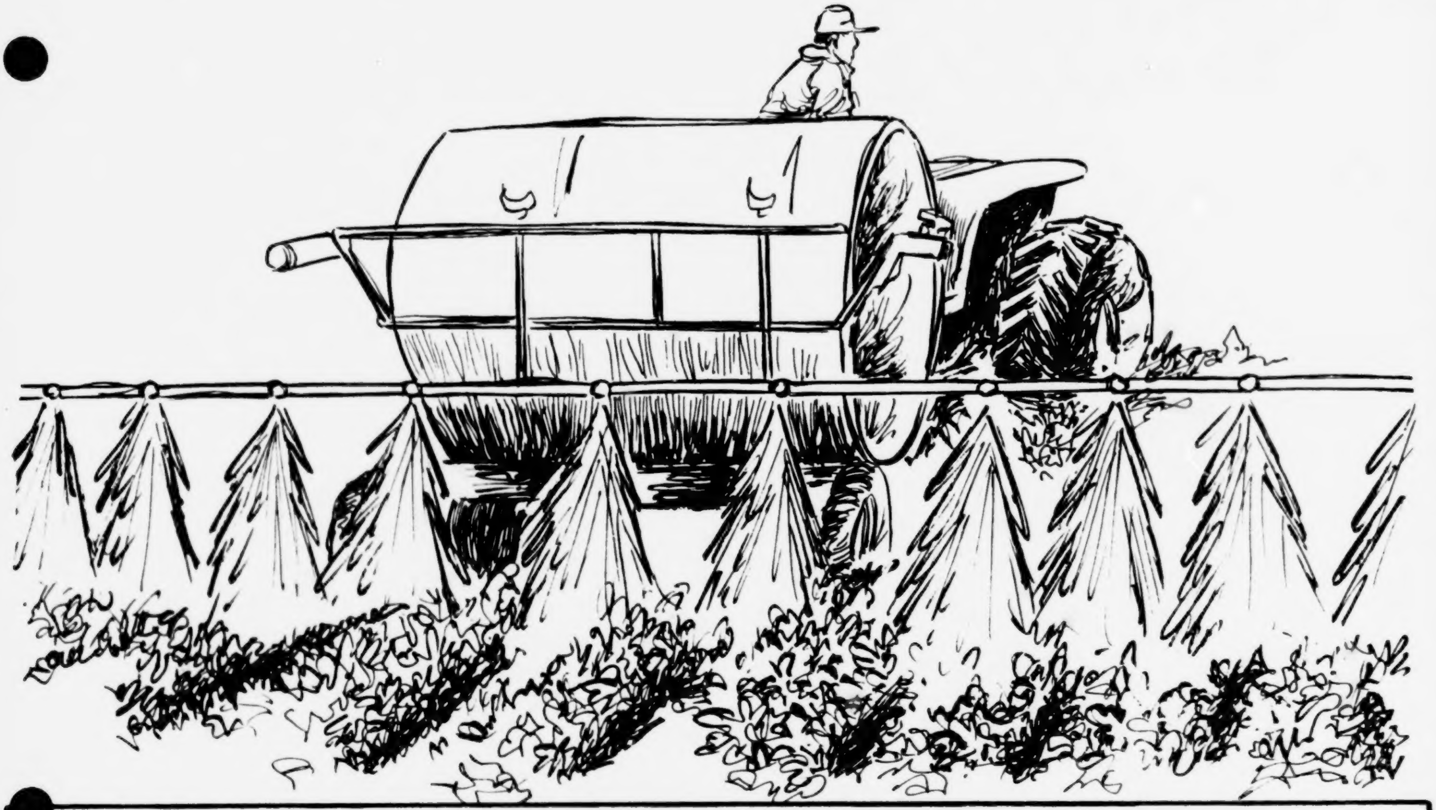
Preparing Soil



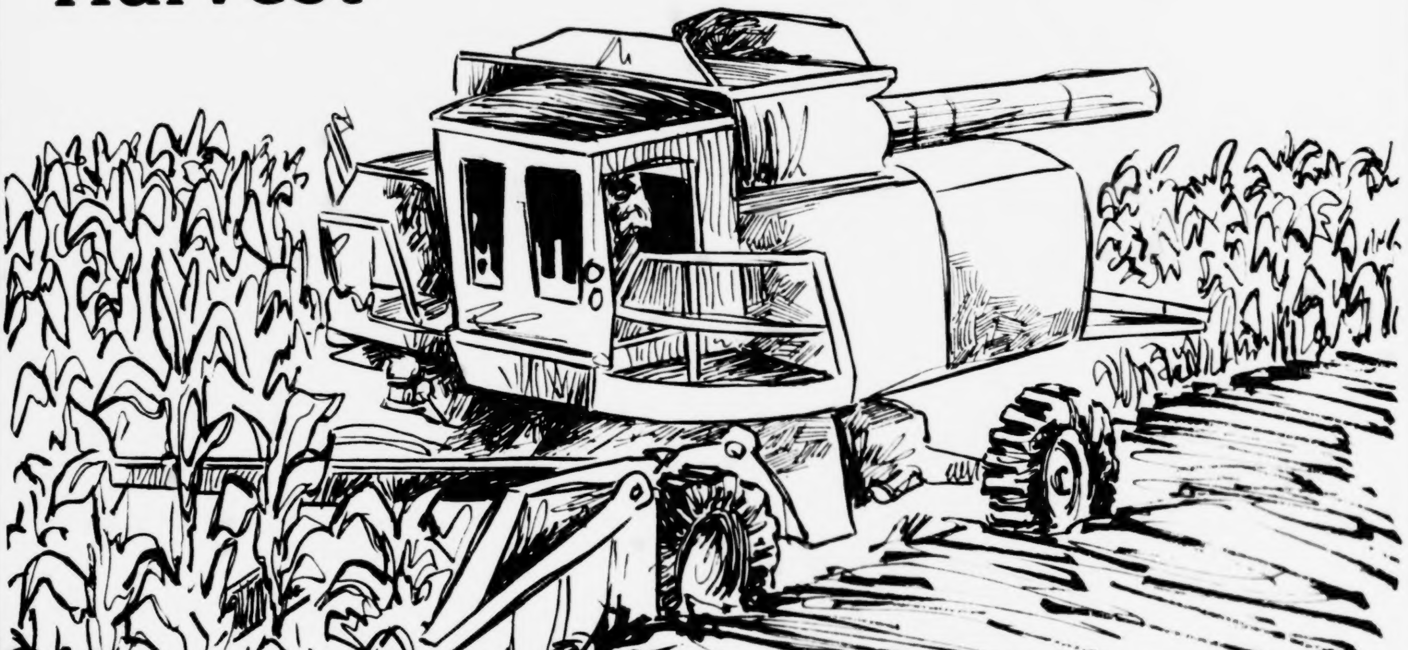
Planting



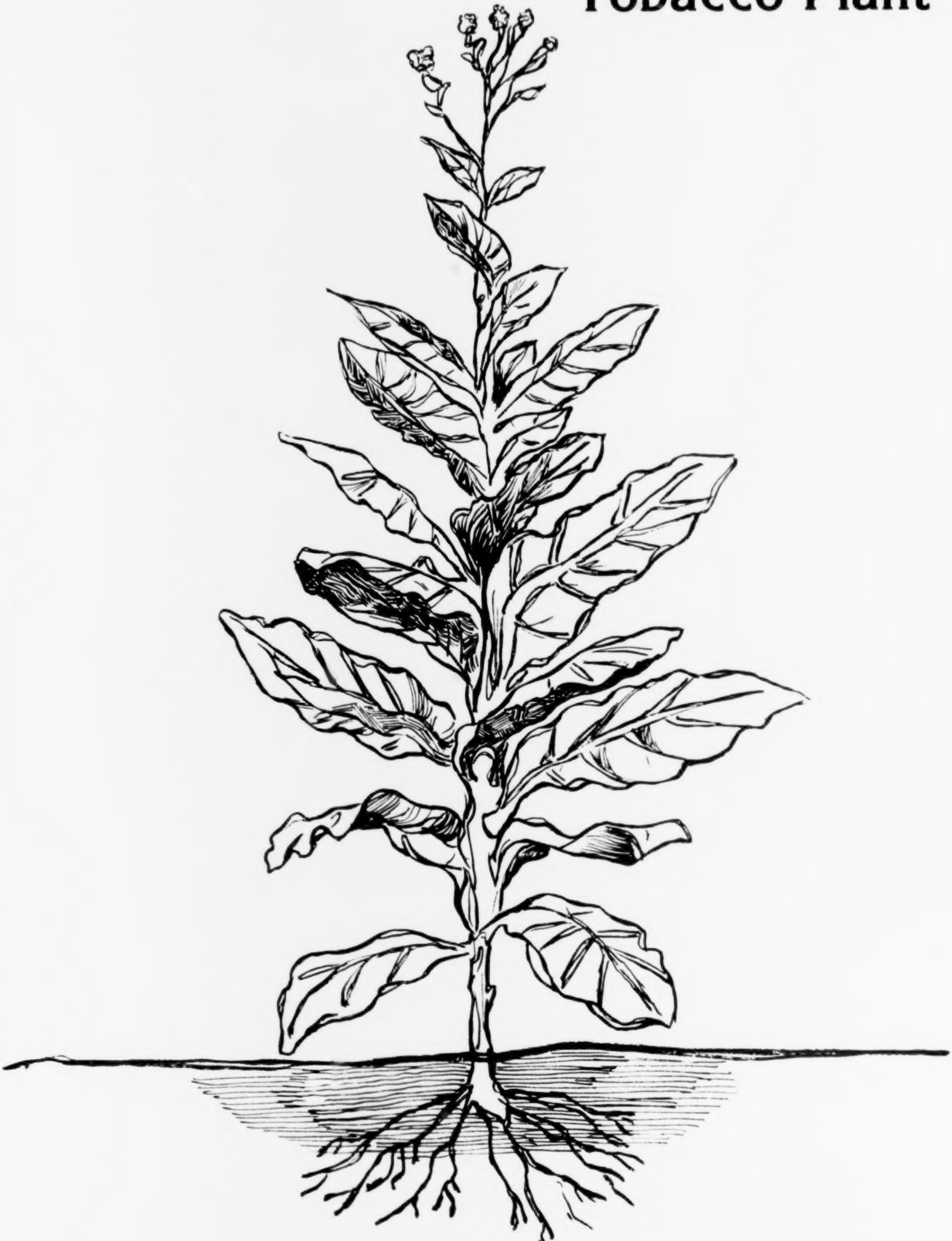
Applying Pesticide

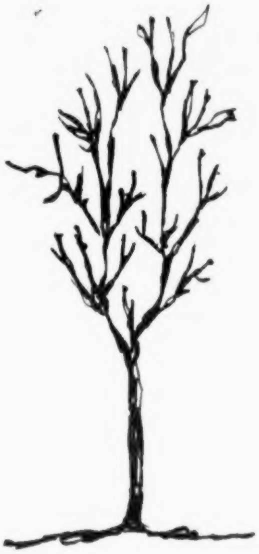


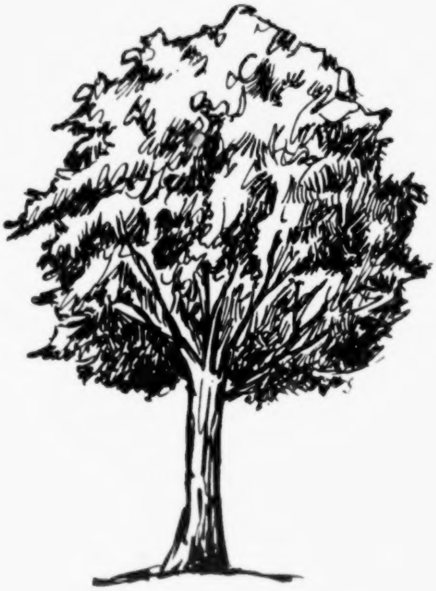
Harvest

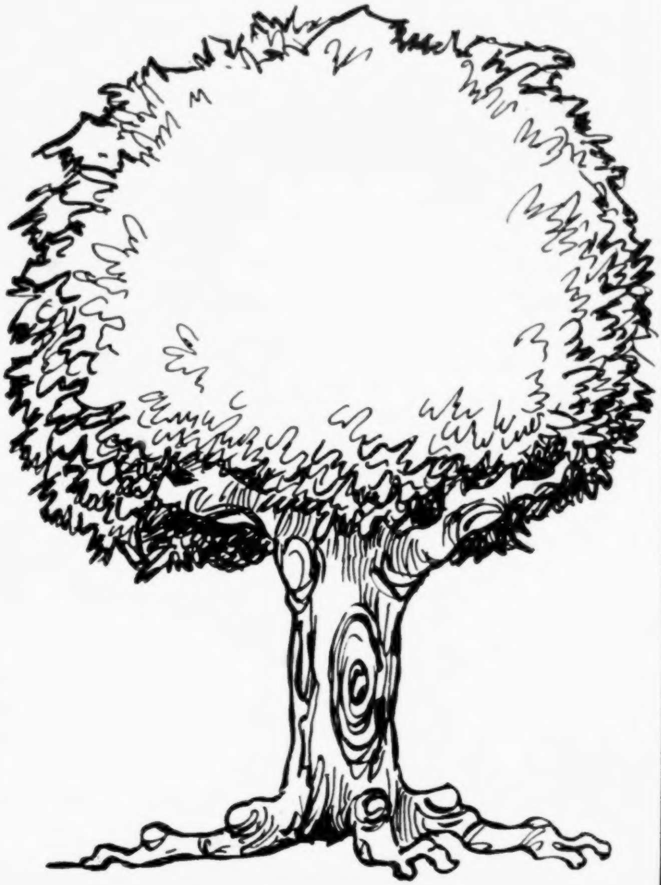


Tobacco Plant

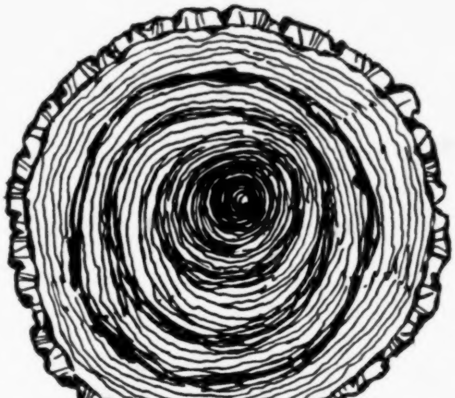


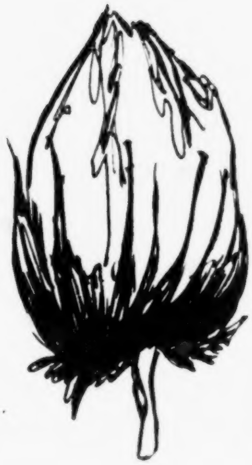




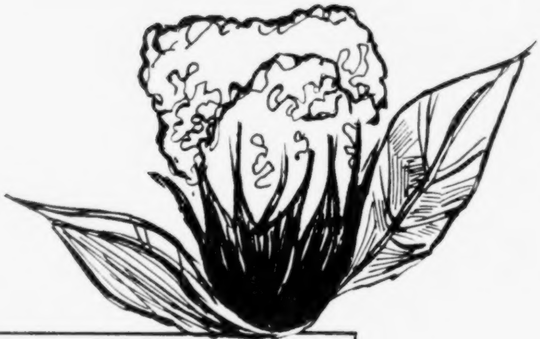


Cross Cut

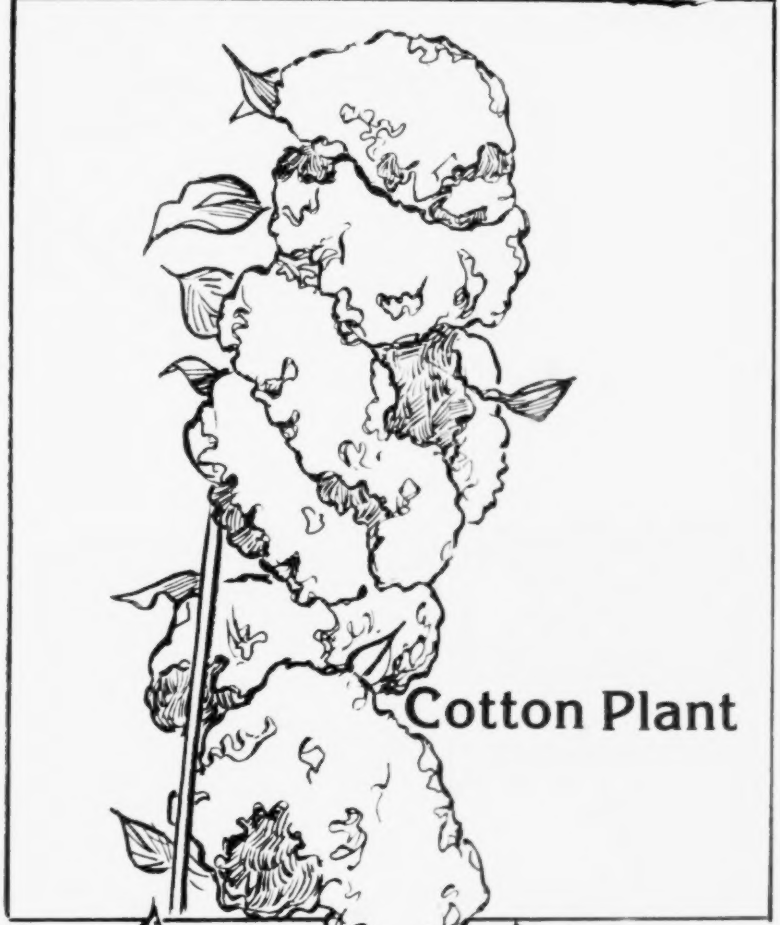




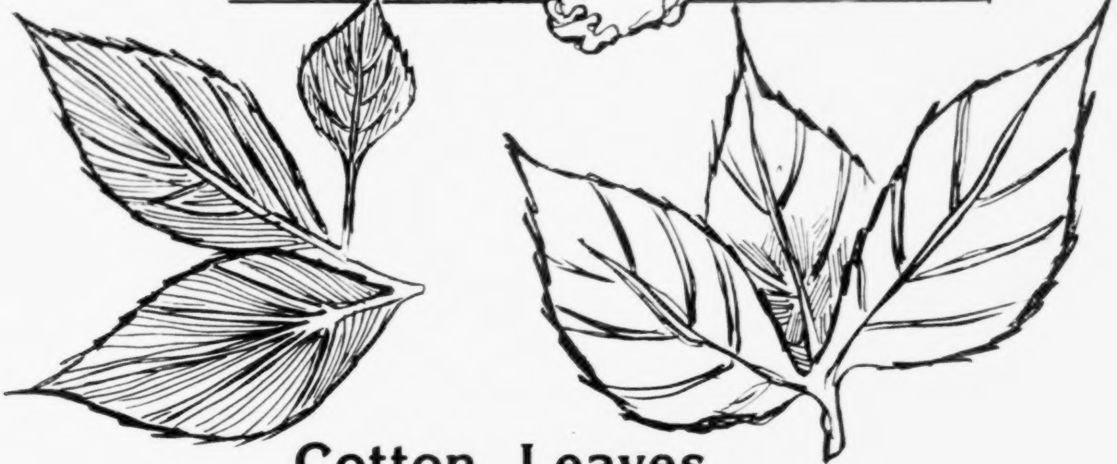
Boll



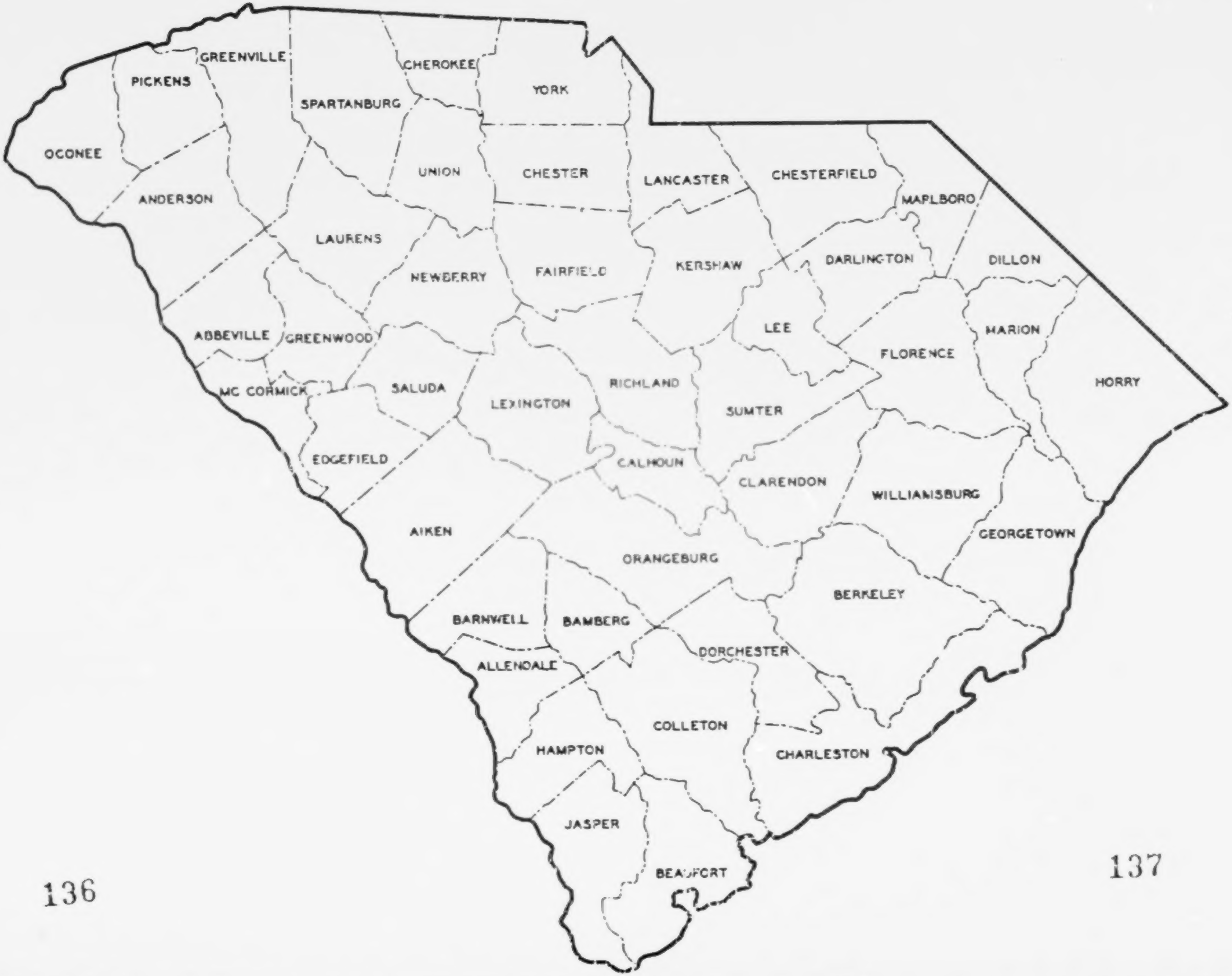
Bloom



Cotton Plant



Cotton Leaves


GREENVILLE
PICKENS
CHEROKEE
YORK
SPARTANBURG
OCONEE
UNION
CHESTER
LANCASTER
CHESTERFIELD
ANDERSON
MAPLBORO
LAURENS
DARLINGTON
DILLON
KERSHAW
NEWBERRY
FAIRFIELD
LEE
MARION
ABBEVILLE
GREENWOOD
FLORENCE
RICHLAND
HORRY
SALUDA
MC CORMICK
LEXINGTON
SUMTER
EDGEFIELD
CALHOUN
CLARENDON
WILLIAMSBURG
AIKEN
GEORGETOWN
ORANGEBURG
BERKELEY
BARNWELL
BAMBERG
DORCHESTER
ALLENDALE
COLLETON
HAMPTON
CHARLESTON
JASPER
BEAUFORT

KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers

and the Curriculum Section

of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

Fourth Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society." **Why Agriculture Is So Important**
Ag in the Classroom
United States Department of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

S. C. Department of Agriculture
  Dr. Richard H. Jesse
  Peggie L. Davis

Forestry Commission
  Rhett Bickley

Water Resources Commission
  Chris Brooks
  Danny L. Johnson

Clemson Extension Marine Research
  Jack Whetstone

Land Resources Commission
  John W. Parris
  Cary Chamblee
  Charles Logan
  Von Snelgrove

Wildlife and Marine Resources Department
  Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

FOURTH GRADE

TABLE OF CONTENTS

Unit I: Origin: What's on a Farm
Need: Horses
Language Arts; Science; Art

Unit II: Need: Use of Cotton
Language Arts; Science; Social Studies

Unit III: Need: A Healthful Diet
Origin: South Carolina Food Crops
Health; Science; Language Arts

Unit IV: Need: Agricultural Research
Social Studies; Science; Art

Unit V: Marketing: Food Labels and Packaging
Health; Language Arts; Mathematics; Art

Unit VI: Origin and Marketing: Aquaculture and Mariculture
Language Arts; Science, Mathematics

Unit VII: Marketing: Supermarkets/Grocery Stores
Social Studies; Language Arts; Art

Unit VIII: Management: Growing Crops: Peaches
Language Arts; Science; Art

Unit IX: Management: Pesticides
Language Arts; Science, Health; Art

Unit X: Need: Farmers as Professionals
Language Arts; Career Awareness

Unit XI: Marketing: Milk Production
Language Arts; Science; Health; Art

Unit XII: Origin and Need: Livestock/Swine
Science; Health; Language Arts; Math

NOTE: An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6).

ILLUSTRATIONS INCLUDED

GRADE 4

4-1	Horse
4-4	Peanut/Sweet Potato
4-6	Sea Animals
4-8	Peach

Grade 4

Unit 1

KEEPERS OF THE LAND

Instructional Area:
Language Arts
Art
Science

Agricultural Concept:
Origin: What's on a Farm
Need: Horses

Objective: Students will learn different characteristics of horses.

Introduction: Ask students what is different about "these two horses" as you show a picture of a black horse and a white horse; a brown (bay) horse and a yellow (palomino) horse; any solid-color horse and a pinto (also called paint, calico, but never "spotted").

Activities:

1. Ask students what the difference is between a black and a bay horse (brown with black mane and tail). Do the same with these pairs (as you have pictures available): a sorrel (red) and a palomino (gold with white mane, tail); a buckskin (gold with black mane, tail) and a gray; a pinto (large colored patches and an Appaloosa (solid in front, spots on rump). Lead students to see that color is an important characteristic of horses. If pictures are available, have students label them and post on a bulletin board panel entitled "Color." Otherwise, have them post index cards indicating the various horse colors.

2. Now, put up a second bulletin board panel, entitled "What kind (breed) of horse?" Ask children if they know: an Arabian horse, a quarter horse, a thoroughbred, a Clydesdale, etc. Show pictures and let them compare the horses. Help them compare size, legs, neck, head, chest, body length; let them also talk about use--all but the Clydesdale are used for saddle horses. What makes the thoroughbred good for racing, hurdle jumping? the quarter horse good for quick turns and fast speed over short distances in working cattle? the Clydesdale good for draft work? Introduce a few horse words (number depending upon student levels): withers, rump, hindquarters, mane. You might also introduce movement words: trot, gallop, canter. Talk about how horses are measured (in "hands" - a "hand" equals 4 inches.) Measuring goes from ground to top of withers or shoulders. Display available pictures by name signs.

3. Let students talk about what a buyer looks for in a "good" horse (in general terms). Talk about such items as age of horse (most horse books have diagram of front teeth and what marks to look for); straight, smooth-boned legs; good chest; straight back in profile (not swayed in saddle area, not sharply sloping towards tail in rump area); smooth coat without many scars. Disposition is also important: ears standing up, and pointing forward, an indication of an alert, willing horse; laid back ears, a mean, hostile horse. If students are interested, you may want to discuss nose shape (profile: dish-shaped, typical of Arabians, considered to show "sweet disposition; flat, also desirable; and humped or "Roman nose," indicative of mean disposition).

4. Let students choose "their favorite horse" for breed, color, disposition. They will write 3-4 sentences describing that horse. They will also draw and color their horse as accurately as they can, based on what they have learned to observe. Display on the bulletin board.

Culminating Activity: If possible, have a local horse breeder talk to the class about the kind(s) of horses he/she raises on his/her farm, and why.

Materials:

Pictures of different colors/breeds of horses
Horse magazines, books on horses, encyclopedias
Bulletin board paper and appropriate "signs" (colors, breeds)

Grade 4

Unit 2

KEEPERS OF THE LAND

Instructional Area: Language Arts
Science
Social Studies

Agricultural Concept: Need: Use of Cotton

Objective: Students will examine the many ways cotton is used by animals and people.

Introduction: Hold up a cotton boll (or ball) and a piece of cotton fabric. Ask students why the two objects are related (alike).

Activities: If necessary, show students pictures of cotton plants and talk about cotton before beginning.

1. Display 10 numbered objects on a table (5 cotton products, 5 non-cotton products). On a sheet of paper, each student numbers from 1 to 10 and writes "cotton" by the cotton products. Discuss and explain those products students do not know. Show them other unfamiliar cotton products.

2. Each student begins a "Cotton Box." It might be covered with all-cotton fabric or cotton balls. The student will collect items made from cotton or pictures of items. OR each student might make a cotton booklet instead.

3. Students examine various clothing items to determine if they are cotton. Teacher defines word fiber and writes it on the board. He/she shows them how to read labels and explains that some clothes are part cotton and part another fiber. Students compare all-cotton and all-wool swatches of material for softness.

4. Students each write two or three sentences indicating why cotton is important and illustrate their paper with a crayon or chalk drawing. Teacher collects the pages into a "Class Cotton Book". Teacher might give each student a sheet of paper shaped like a cotton boll for writing the final draft of the composition.

5. Teach students that cotton also provides food products for people and animals. Make Brown Sugar Brownies using cotton seed oil.

    Recipe:
    ¼ c. cottonseed oil
    1 c. brown sugar
    1 egg
    3/4 c. flour
    1 tsp. baking powder
    ½ tsp. salt
    ½ tsp. vanilla
    ¼ c. chopped walnuts

    Combine all ingredients except walnuts until blended. Slightly grease 8" x 8" cake pan. Evenly spread batter in pan. Sprinkle walnuts over the top and gently press. Bake at 350° for 25 minutes. Cut when cooled. Makes 16 2-inch square bar cookies.

Culminating Activity:

Game: Picking Cotton
Using flannel, construct a cotton plant with detachable cotton bolls (made from white flannel). Let individual students come up to the board to name an item made from cotton. If the item is made from cotton, let the student pick a cotton boll.

Materials:

Selected cotton products (towels, upholstery fabric, T-shirt, padding, cooking oil, margarine, salad dressing, meal or hulls, string, dress, etc.) and non-cotton products (cheese, wool, slice of bread, etc.) Shoe boxes; paper for booklets, magazines, brochures; "cotton-shaped" sheets of paper. Flannel and flannel board.

Resource:

Cotton, Inc. and National Cotton Council of America (See Resource List.)

Local County Extension Office

Grade 4

Unit 3

KEEPERS OF THE LAND

Instructional Area:

Health
Science
Language Arts

Agricultural Concept:

Need: A Healthful Diet
Origin: South Carolina Food Crops

Objective:

Students will learn that a variety of foods are needed for a healthful diet; they will learn which foods are raised in South Carolina to contribute to that diet.

Introduction:

Have students write down their favorite food. Ask if they would like to eat nothing else but that food every day for a week? What might happen? What might happen if they ate nothing else for a year? Would they be healthy?

Activities:

1. Explain to students that we need many different foods to grow and feel well. Our bodies need foods from several groups: fruits and vegetables; cereals, breads, grains; meats, poultry, eggs, fish, dry peas and beans; milk, cheese, yogurt. In addition to eating a variety of foods, students need to be aware of the quality of foods within these groups. They should try to select foods as recommended by the dietary goals (more carbohydrates; less fat, sugar, salt, cholesterol).

2. Students will keep a food journal for a week, recording everything they eat. At the end of the week, students will compare their diets with the recommended diet in their health books. (How much milk did they drink a day? How many green and yellow vegetables did they eat daily?)

3. Students will analyze the school menu daily for a week to determine what food groups are represented. A food service person might talk to the students about the process of planning the school menus.

4. Students will also analyze the school menu daily to determine what South Carolina products are used. The teacher will write the headings South Carolina Food Crops and Other Food Crops on oaktag. As students respond, the teacher will write each food under the appropriate heading. (For further study, other foods will be researched for location of production.)

Culminating Activity: Have students plan (individually) a full day's menu (breakfast, lunch, dinner) to ensure a balanced diet that day. South Carolina products should be starred on the menu.

Materials:

School menus
Oaktag and markers
Available material on South Carolina products

Grade 4

Unit 4

KEEPERS OF THE LAND

Instructional Area: Social Studies/Science
Art

Agricultural Concept: Need: Agricultural Research

Objective: Students will explore the research of Dr. George Washington Carver with the peanut and sweet potato.

Introduction: Let students give examples of foods they have eaten that were made from peanuts and sweet potatoes.

Activities:

1. Tell students George Washington Carver (1864-1943) was called "The Peanut Wizard" because of his discovery of hundreds of uses for the peanut and peanut plant. Some of these products included wood dyes, linoleum, soap, flour, oils, paint, ink, butter. Most peanuts are presently produced for food products; the remainder are used for oil, meal, seed, and feed or are exported. (Information from South Carolina Peanut Board).

2. Tell students they are going to have a contest to see who can find the most uses for peanuts or sweet potatoes. (Students choose one to research.) The students with the most in each category get to list the products on the large tagboard peanut and potato.

3. Teach students some basic facts about the peanut plant: It is a kind of pea. Its seeds are in pods which grow underground. A peanut pod is a fruit. Peanuts grow in warm climates. (Further information, including a poster, is available from the S. C. Peanut Board.)

Culminating Activity: Construct a peanut or sweet potato mobile of peanut or potato products. Use string to hang pictures from coathangers.

Grade 4

Unit 4, cont.

Materials:

Large tagboard potato and peanut
Marker
Coathangers, string, pictures, tagboard for mobiles

Resources:

National Peanut Council (See Resource List.)

The S. C. Peanut Board (Contact State Department of Agriculture)

Grade 4

Unit 5

KEEPERS OF THE LAND

Instructional Area:

Health
Language Arts
Mathematics
Art

Agricultural Concept: Marketing: Food Labels and Packaging

Objective: Students will learn that food labels contain many kinds of information and that crops/foods are measured in different ways.

Introduction: Introduce the word ingredient. Ask students how they know what ingredients are in foods they eat.

Activities:

1. Assign students to groups of 5 or 6 to study labels from a variety of food products. The teacher will explain in general the parts of a food label. Students will check their labels and list the major food sources found (ex. noodles-wheat), omitting preservatives. Each group will make a chart with the information obtained: FOOD/MAJOR INGREDIENTS.

2. Discuss with students the fact that a variety of measures are used for food crops and products (bushels, pounds, grams, gallons, liters, etc.) With the teacher's assistance and through research using the labels and measuring containers, students identify as many different food measurements as possible. The teacher records these at random on the board. The group categorizes and orders measurements (liquid & dry in both U. S. units and metric). Then students match crops/foods to the appropriate measure.

3. Students develop their own food labels for class display or create a collage of labels they bring from home.

Culminating Activity: Play a speed game. Call out a product (bread, pickles, ketchup, vegetable soup, etc.) Students raise hands if they know the major food sources. First hand up gets a point.

Materials:

Food labels (collected by teacher and students)
Measuring containers
Resource List materials (books, pamphlets)
Poster paper or board

Grade 4

Unit 6

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Science
Math

Agricultural Concept: Origin and Marketing: Aquaculture and Mariculture

Objective: Students will learn that animals from fresh and salt water are an important source or food; farming of these animals is increasing.

Introduction: Survey the class: How many people have ever been fishing in a pond or creek? Deep-sea fishing? Crabbing? Digging for clams? Shrimping? Record on the board. Have students briefly share a few experiences. Do we eat any other animals which are caught wild? (Deer, quail) Why do you think seafoods are generally still caught mostly in their natural habitat? (No one owns the sea.)

Activities:

1. Enlist the media specialist's assistance in selecting a collection of books on the sea and on aquatic foods and on aquaculture/mariculture if available. Provide time for background reading about the topic. Discuss: kinds of animals, differences between saltwater and freshwater animals, seafood industry.

   NOTES:
   New kinds of farms are currently being developed to raise aquatic animals commercially in controlled settings. For example, there are farms in the state which raise catfish and crayfish. There is an experimental Waddell Mariculture Center in Bluffton, South Carolina. Aquaculture refers to the cultivation of aquatic food in general; mariculture refers to the cultivation of seafood (in salt water).

2. Have students make charts (with pictures or student drawings) of fresh and saltwater products from South Carolina.

3. The teacher might set up a "market" with aquatic foods. Students will be instructed to buy as much of at least 3 varieties of fresh-water food or seafood as they can with a set amount of money. Students must calculate the amount of each item and the total bill and present their bill and play money to the teacher. (Cards with aquatic food names and prices are needed. A sample set of cards might be 2 pounds of shrimp/59¢ a pound.)

Culminating Activity: Have each student write a paragraph telling why he/she thinks aquaculture/mariculture will or will not become more important to South Carolina.

Materials:

Books on ocean/aquatic foods
Chart materials
Aquatic food cards
Play money
Encyclopedias

Resource: Waddell Mariculture Center (Resource List)

Grade 4

Unit 7

KEEPERS OF THE LAND

Instructional Area: Social Studies
Language Arts
Art

Agricultural Concept: Marketing: Supermarkets/Grocery Stores

Objective: Students will learn that supermarkets/grocery stores provide many kinds of foods in one location.

Introduction: Students are told they are going to write down as many places as they can think of where they can buy food. Which places have the most kinds of food? Record on board.

Activities:

1. Students write down their answers to the following questions:

   a) Where do you think the early Indians got their food? (grew or hunted it)
   b) The first settlers in South Carolina? (grew and hunted most; imported some)

   Discuss with students some facts about marketing food: Long ago every family farmed. People have moved from growing or hunting everything they eat to growing little or none of their food. Stores have changed from trading posts and general stores to supermarkets. Many products are now imported from other states and countries.

   Students might role play early farming/marketing vs. modern.

2. Assign students to watch for trucks which are transporting food and to write down the names of those they see. After a week, compare lists. Point out that much effort is needed to get the many foods to the supermarket.

   Then, make a poster with the students illustrating the route from the farm to the market (farm-transport-storage-processing-transport-supermarket).

3. Have each student draw a map of a supermarket where their family shops, showing the location of the major categories of food.

Culminating Activity: Have students discuss what they think would happen if we no longer had grocery stores. Let each student then write a paragraph explaining why stores are important in modern America.

Materials: Poster board

Grade 4

Unit 8

KEEPERS OF THE LAND

Instructional Area:
Language Arts
Science
Art

Agricultural Concept: Management: Growing Crops (Peaches)

Objective: Students will become familiar with peach orchard production specifically and with South Carolina fruits in general.

Introduction: Students vote on their class favorite fruit and least favorite fruit.

Activities:

1. Have prepared vocabulary words on peach-shaped cards: orchard, row planting, harvesting, pest management, pruning, thinning, irrigation, site selection, frost, drainage. Explain in general terms the considerations in peach production (see notes), putting appropriate vocabulary in a large fruit basket. Have students research further the meanings of these words.

2. Distribute the peach-shaped cards to the class. Students will explain or pantomime (if appropriate) their word. Pruning, thinning, planting, harvesting could be pantomined. The rest of the class has to guess the target word.

3. Have students find the names of as many orchard fruits as possible and list on the bulletin board (peaches, pears, apples, plums in South Carolina; oranges, cherries, grapefruit, lemons, tangerines elsewhere).

4. Let students illustrate the stages tree fruit goes through: bud, flower, fruit. Under each stage, the student can write a few sentences explaining the stage, season of the year, etc. (See illustration included.)

5. Have students identify other kinds of fruit grown in South Carolina, e.g., grapes and watermelons. Students might be interested in vineyard production and melon production.

Culminating Activity: Have a peach farmer, county agent, or 4-H leader visit the class to discuss peach production in South Carolina (and other fruits).

Materials:

Fruit basket
3" X 4" oaktag peaches with vocabulary words
Illustration

Resource:

Local County Extension Service agent/
4-H leader/farmer

Clemson Extension service pamphlets

Notes:

1. These activities can be used with any orchard crop with variations.
2. Peach production involves the following considerations:
    - Preplant considerations (site selection, preparation, selection of varieties, care of young trees)
    - Tree training and pruning
    - Orchard floor management (weed control)
    - Thinning of peaches (generally hand-thinned with bats)
    - Irrigation
    - Nutrition (fertilizer)
    - Pest management
    - Harvesting and handling
3. Peaches will not tolerate water-logged soil. They also need to be planted away from possible frost pockets.

Grade 4

Unit 9

KEEPERS OF THE LAND

Instructional Area:
Language Arts
Science/Health
Art

Agricultural Concept: Management: Pesticides

Lesson Objective: Students will learn that pesticides are used to control pests affecting our food.

Introduction: Ask students what farmers do to keep insects and diseases out of our food. Record guesses on the board.

Activities:

1. Teach students the suffix - cide. Use these words in sentences after defining each word through use of the dictionary and discussion of each word: pesticide, herbicide, and insecticide.

2. Present students with the four rules for pesticide safety:
    a. Correctly identify the pest problem (insect, weed, or disease).
    b. Read the label.
    c. Apply pesticides properly.
    d. Store pesticides safely.
    e. Only adults should use them.

    Explain that pesticides have enabled us to produce more abundant crops. Without them, crops would be damaged severely and food prices would increase. Pesticides must be carefully researched. They are dangerous chemicals, and there are concerns about their correct use to avoid health and environmental damage. Above all, they must be used carefully. Have students (in groups) make posters of the rules and illustrations of the rules.

3. Write and dramatize a pesticide commercial. Or let students look for newspaper/magazine advertisements for pesticides, herbicides, etc; post on the bulletin board.

Grade 4

Unit 9, cont.

Culminating Activity: Have students collect a list of as many words ending in suffix - cide as they can find related to agriculture. (molluscicide, nematocide, rodenticide, and fungicide are others.)

Materials:

Dictionary
Posterboard

Grade 4

Unit 10

KEEPERS OF THE LAND

Instructional Area: Language Arts
Career Awareness

Agricultural Concept: Need: Farmers as Professionals

Objective: Students will become aware of the many roles of a professional farmer and of related professions.

Introduction: Ask students: What do you think of when the word "farmer" comes to your mind? What is a farmer?

Activities:

1. Students write short paragraphs (5-8 sentences) on "What is a Farmer?" The paragraphs should indicate how students perceive farmers.

2. The teacher leads students to awareness of the many possible roles of a farmer by reading books (fiction or non-fiction) or showing films/filmstrips on farming. Compare to student responses. Key vocabulary can be introduced: grower, chemist, computer operator, conservationist, manager, mechanic, business man, tiller, steward, vet, geneticist, etc.

3. Students are given the assignment of finding someone they know who is in a profession related to farming. (If students live in a rural area, they might identify several.) A group of students can then draw a diagram for the bulletin board showing these occupations and their relation to farming. Some examples are: trucker, supermarket clerk, biologist, chemist, salesman, processing plant employee.

Culminating Activity: Have the class choose from among the following activities:

- Have a speaker in to talk about farming careers (students issue invitation).
- Write essays about farming as a career (to be posted in the halls).
- Design a display on farming as a career for a school bulletin board, front entrance, etc.

Materials:
Books or pictures on farming (Resource List)
Local County Extension Office
Films, pamphlets, speakers
Bulletin board materials

Resource: Kiwanis Club Farm-City Week activities

Grade 4

Unit 11

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Science/Health
Art

Agricultural Concept: Marketing: Milk Production

Objectives: Students will learn about the many kinds of milk products available at the grocery store and how milk gets from the cow to the table.

Introduction: Ask students to think of as many different kinds of milk products as they can. List these on the board. Ask them to save a label/milk carton from one kind and bring it to class.

Activities:

1. Discuss pasteurization (and homogenization if desired). Explain to students why these processes are important. Assign independent reading on milk processing, Louis Pasteur, etc. and share reports in class.

2. Refer to list of kinds of milk on the board. Using available labels, lead a discussion with students on the many different ways that milk is available (in a liquid or dry form): "sweet" milk, buttermilk, low-fat, skim, powdered, evaporated, condensed, half and half, whipping cream, goat's milk, chocolate, and milk in a carton that does not have to be refrigerated but can be kept on a shelf. Teach students the basic differences among the kinds of milk. Use as many labels, cartons, cans as you can to show the students the varieties.

3. After viewing a filmstrip or conducting a brief discussion of the production of milk, students write compositions entitled "The Journey of Milk."

   NOTES: Dairy cows must be adequately fed, watered, and sheltered. Only those who have had calves give milk (up to a year after calving).

Cows are milked by electric milking machines; fresh milk is kept in refrigerated storage tanks/coolers. The milk is then pumped into a refrigerated tank truck and transported to a processing plant. The raw milk is pasteurized (most is also first homogenized), and put into sterile bottles/cartons by machine. Vitamin D may also be added. Refrigerated delivery trucks transport it to stores for purchase by consumers. (Variations of this process produce other milk products.)

Culminating Activity: Bring in several kinds of milk or cream for students to taste, preferably some that may not be as familiar, and then have students make a mural on milk production.

Materials:

Labels/cartons
Different types of milk products/paper cups
Filmstrip (Resource List)
Mural materials - poster board, crayons, etc.

Grade 4

Unit 12

KEEPERS OF THE LAND

Instructional Area: Science/Health
Language Arts
Math

Agricultural Concept: Origin and Need: Livestock/Swine

Lesson Objective: Students will become aware of the importance of swine (livestock) production.

Introduction: Write SWINE on the chalkboard and ask students what the word means to them.

Activities:

1. After discussion, bring out the following facts:
   - (a) Swine is the broad term for hogs, pigs.
   - (b) Pork is the food that comes from hogs.
   - (c) Pigs are born in litters (usually 8 or 9).
   - (d) A piglet is a baby hog; a sow, a mother hog; a boar, a male hog.
   - (e) Corn is their main food; soybean meal is used for a supplement.

   Give students a true-false check on the facts.

2. Have students identify pork products (teacher adds additional ones): ham, pork chops, sausage, bacon, Canadian bacon, pork roast, barbeque, hog jowls, pig's feet, chitterlings ("chitlins"). Students probably are not aware of other products from swine: gelatin, pepsin in chewing gum, clothing such as gloves and billfolds. Some medicines also come from swine.

   Students might compare beef products with swine products.

3. Ask students: Why is a football called a "pigskin"? (Because the cover used to be made from pigskin.) Have students make acrostics (puzzles) in the shape of a football using the letters SWINE. (BEEF might also be used.)

Grade 4

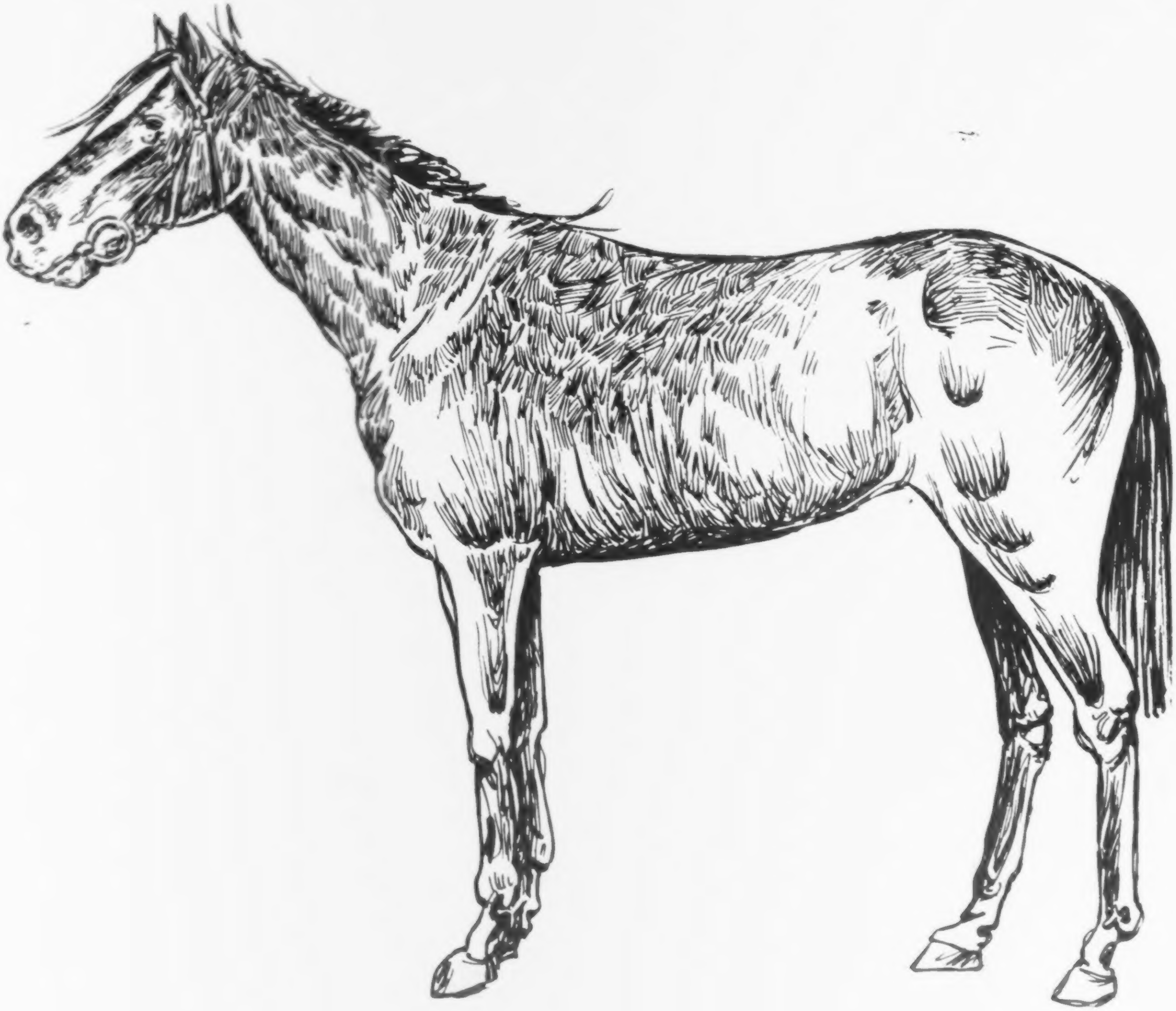
Unit 12, cont.

4. Have students in groups of 4 use the classified ads to compare various pork product prices at different grocery stores. Students might graph differences.

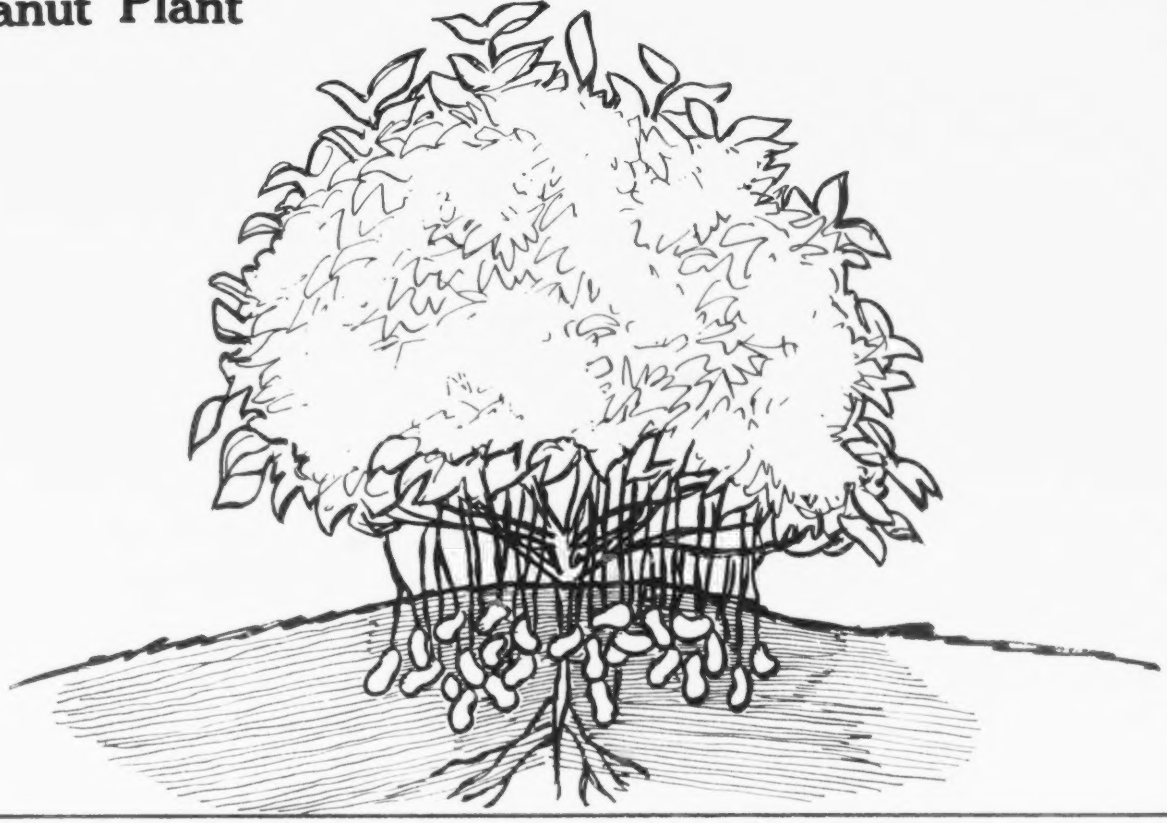
Culminating Activity: Make a bulletin board entitled "Hogs Are Beautiful." Display acrostics, graphs, ads, products from magazines.

Materials:

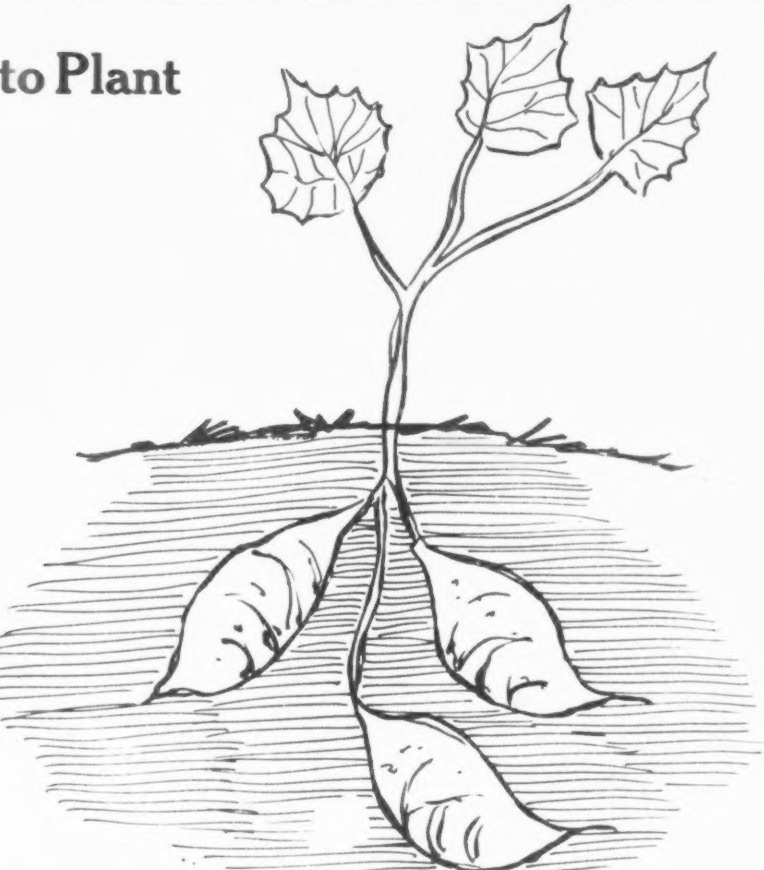
Newspapers
Materials for bulletin board

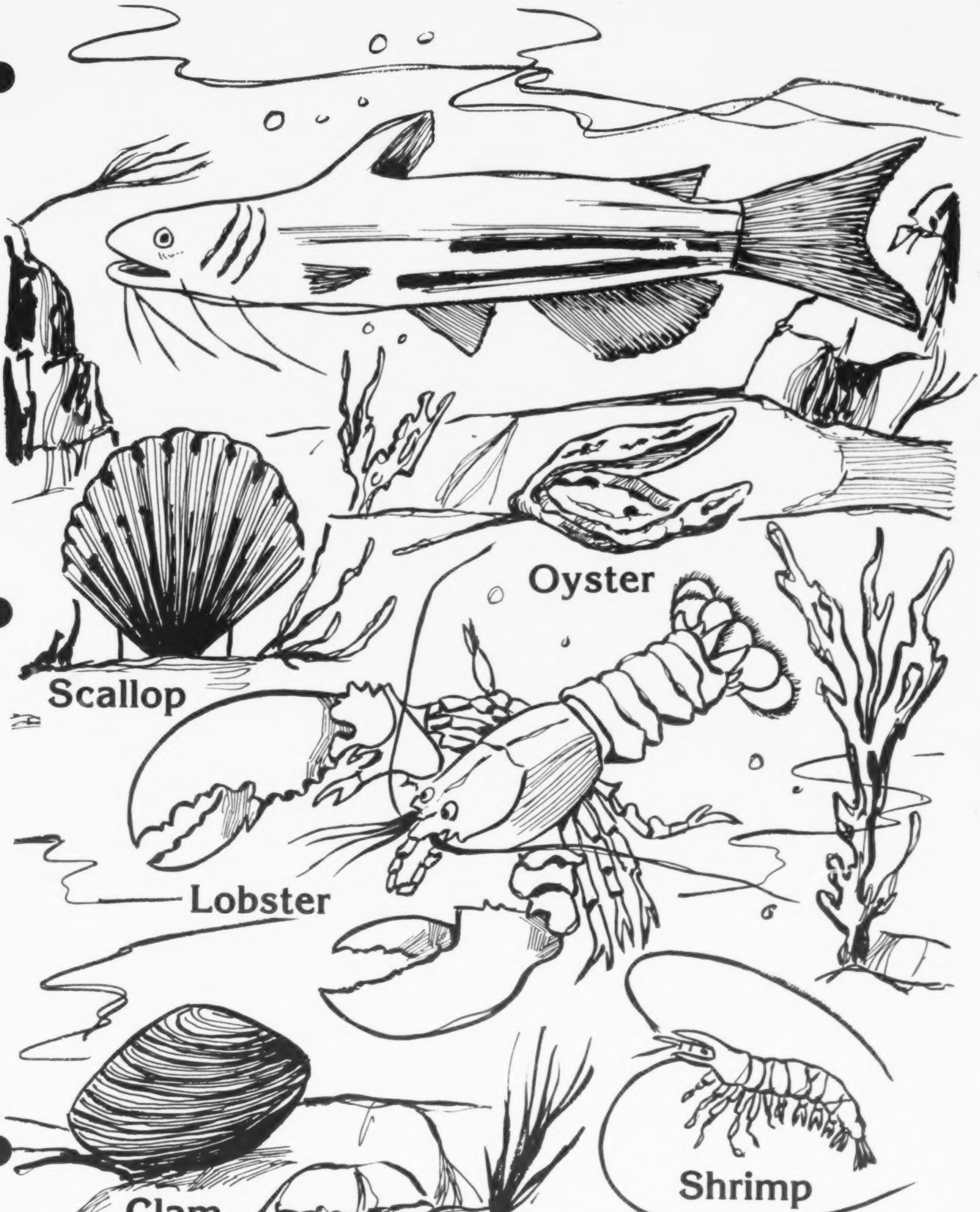


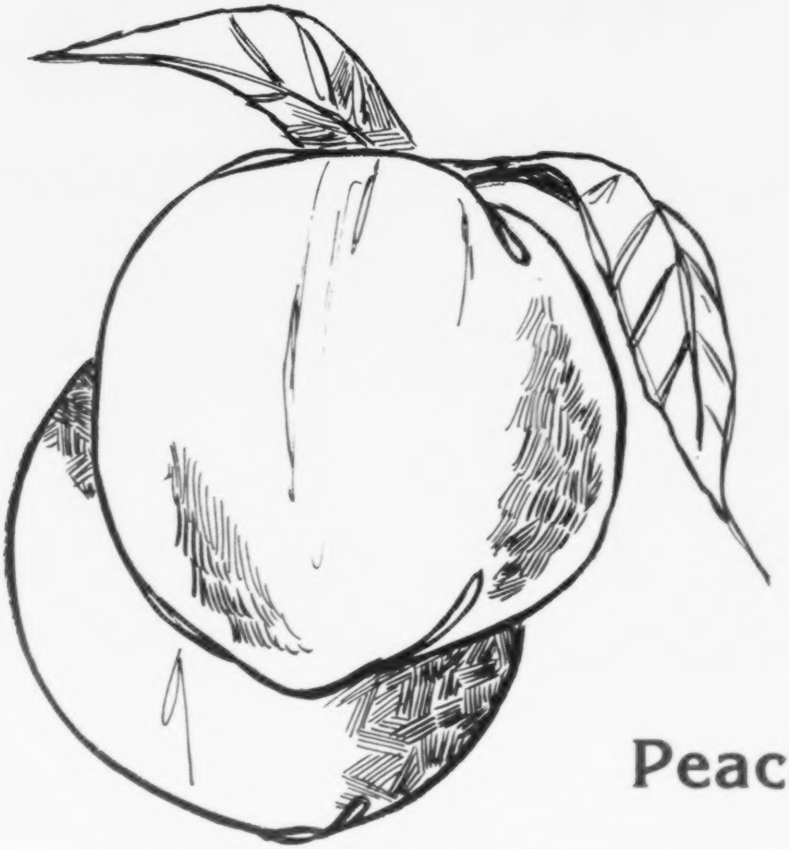
Peanut Plant



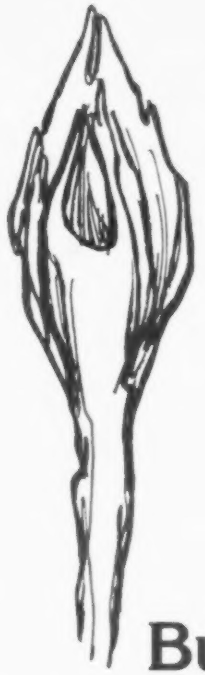
Sweet Potato Plant



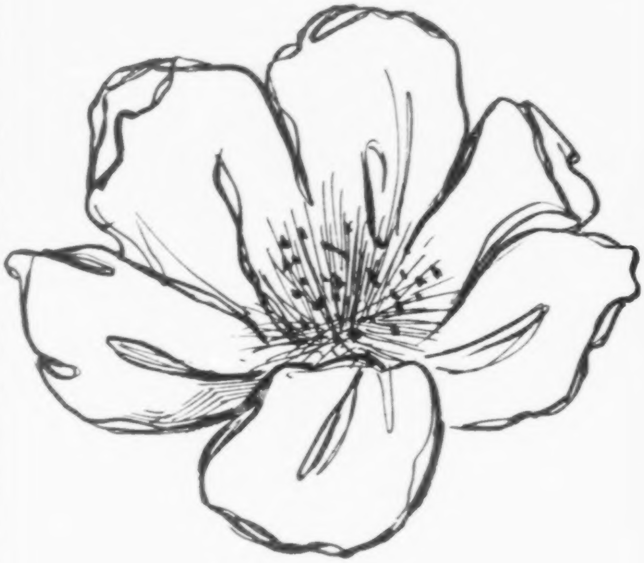

Oyster
Scallop
Lobster
Clam
Shrimp



Peach



Bud



Flower

KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers

and the Curriculum Section

of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

Fifth Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society."

Why Agriculture Is So Important
Ag in the Classroom
United States Department
of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

S. C. Department of Agriculture
Dr. Richard H. Jesse
Peggie L. Davis

Forestry Commission
Rhett Bickley

Water Resources Commission
Chris Brooks
Danny L. Johnson

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

Clemson Extension Marine Research
Jack Whetstone

Land Resources Commission
John W. Parris
Cary Chamblee
Charles Logan
Von Snelgrove

Wildlife and Marine Resources Department
Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

FIFTH GRADE

TABLE OF CONTENTS

Unit I: Origin: Row Crops/Field Crops: Staples
Need: Our Basic Foods
Science; Language Arts

Unit II: Management: Poultry Production
Need: Poultry as Food
Language Arts

Unit III: Management: Pesticides: Aquatic Weeds
Science

Unit IV: Marketing: Agriculture in the Media
Mathematics; Language Arts; Social Studies

Unit V: Origin: Forest Products
Need: Forest Products/Conservation
Science; Social Studies; Language Arts; Art

Unit VI: Origin: Interdependence/Relationships within an Environment
Science; Language Arts; Art

Unit VII: Need: Water
Management: Water as a Resource
Language Arts; Mathematics; Social Studies; Art

Unit VIII: Origin: Land Resources: Soil
Science

Unit IX: Marketing: A Class Food Co-Op
Mathematics; Social Studies; Language Arts

Unit X: Management: Land Resources: Where Crops Grow Best
Social Studies

Unit XI: Need: Farming Occupations (Agribusiness)
Art; Career Education

Unit XII: Management: The Farming Profession
Mathematics; Social Studies; Language Arts; Science

NOTE: **An extensive list of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6).**

ILLUSTRATIONS INCLUDED

GRADE 5

5-1	Row/Field Crops
5-5	Writing Materials
5-6	Terrarium

Grade 5

Unit 1

KEEPERS OF THE LAND

Instructional Area:	Science Language Arts
Agricultural Concept:	Origin: Row Crops/Field Crops Need: Our Basic Foods
Objective:	Students will recognize major row/field crops.
Introduction:	Have samples of corn, beans, wheat, hay, soybeans, peanuts, or tobacco. Talk about these and other crops which grow in South Carolina.
Activities:	1. Clip a few pictures of row crops and a few of broadcast crops. Display the two categories of pictures and have students speculate as to the difference in the planting method (and why). Then label as "row crop planting" and "broadcast planting." Invite students to look through farm magazines for pictures to add to the display. 2. Match the samples (which may be put into plastic bags) to the appropriate method of planting on the display board using tacks. Ask students to find out how other crops are grown and to bring in samples to add to the display. 3. Have students find out the major uses of the crops discussed. Students might also research crops which were once important but which are no longer grown in the state; e.g., rice and indigo.
Culminating Activity:	Give students a few minutes to list from memory as many row and field crops as they can.
Materials:	Crop samples Illustration Farm magazines

Grade 5

Unit 2

KEEPERS OF THE LAND

Instructional Area: Language Arts

Agricultural Concept: Management: Poultry Production
Need: Poultry as Food

Objective: Students will learn information about poultry production and the preparation/nutritional value of poultry.

Introduction: Put students into groups to brainstorm: What would happen if we no longer had chickens?

Activities:

1. Discuss proultry facts with students (emphasizing chickens). Poultry includes any fowl raised for meat or eggs: chicken, turkey, pigeon (squab), quail, geese, ducks. South Carolina raises many chickens and turkeys. South Carolina also has pigeon and quail processing plants. (The quail plant is the largest in the world.)

   Chickens produced are of two basic types-egglayers or meat birds. Meat birds are typically heavy, fast-growing, white-feathered birds; egg layers are generally smaller. There are many sizes of chickens; they have different color skins and feathers. Their combs vary in size and shape.

2. Have students discuss characteristics of poultry. Put in chart form if desired. Introduce poultry vocabulary: drumstick, wing, breast, gizzard and liver (or giblets), broiler, fryer, breeder, pullet (term for a female chicken until she lays an egg). Post vocabulary words and have students compose a sentence with each.

3. Put a mystery word on the board every day. Use words which describe a way chicken (or turkey) is prepared (which may be unfamiliar to students). Examples: cacciatore, a la king, curried, divan, croquettes, gumbo, jambalaya, tetrazzini, franks, patties. The class is divided into two teams. The first team to solve the mystery word's meaning daily wins a point. Students also research why chicken (or turkey) is such a desirable meat (low in cholesterol, low in sodium and fat, high in protein, easy to prepare many ways, economical, low in calories).

Grade 5

Unit 2, cont.

Culminating Activity: Use a word puzzle such as the following (or have students create one):

P _ _ _ _ _ _	POULTRY
_ _ O _ _ _ _	BROILER
_ _ U _ _ _ _ _ _	DRUMSTICK
_ _ _ L _ _ _	GIBLETS
T _ _ _ _ _	TURKEY
_ R _ _ _ _ _	BREEDER
_ _ Y _ _	FRYER

Materials:

Puzzles (word)
Embryology to Educate - 4-H manual #99
(from Clemson Extension Service)

Grade 5

Unit 3

KEEPERS OF THE LAND

Instructional Area: Science

Agricultural Concept: Management: Pesticides: Aquatic Weeds

Objective: Students will learn that aquatic weeds cause problems in South Carolina and will learn how to deal with the weeds.

Introduction: Have every student write on a piece of paper a definition for "pest" and one for "weed." Ask students to think of as many kinds of pests and weeds as they can.

Activities:

1. Have available a large pan with some weeds in it. Let students submerge their hands and watch the flow of water. Explain that weeds cause problems in South Carolina -- choke off flow of water, harm water quality, and kill fish. Some of these weeds are: Brazilian eldea, hydrilla, alligator weed, water primrose, and water hyacinth. Ask students to think about the importance of streams, rivers, lakes, and ponds to farmers in the state. Why would these weeds be a problem for them?

2. Invite someone from the Conservation District or Extension Service (listed in phone directory) to explain fish pond management discussing primarily how specific kinds of weeds cause problems and are controlled.

3. There are 3 basic ways of controlling pests: chemical, biological, mechanical.

   CHEMICAL:
   Pesticides (herbicides) or "materials which kill plants" are put into water.

   BIOLOGICAL:
   Beetles, fish, or other insects/animals which eat the weeds can be used.

   MECHANICAL:
   Machines can be used to harvest the weeds.

Have students decide on an advantage/disadvantage of each kind of control. (CHEMICAL: positive=works quickly at a specific site; negative=problem of putting harmful materials in water. BIOLOGICAL: positive=safe for environment; negative=insect/animal may grow out of control. MECHANICAL: postive=safe for environment; negative=transporting machine.) Students might make a chart with this information.

4. Have students think of other kinds of pests and where they occur. How do these pests affect farming?

Culminating Activity: Have students summarize orally what they have learned about aquatic weeds.

Materials:

Pan, water, weeds
Chart paper

Resource:

Water Resources Commission (See Resource List in media center.)

Local Soil Conservation Service representative
Local County Extension Agent

Grade 5

Unit 4

KEEPERS OF THE LAND

Instructional Area:

Math
Language Arts
Social Studies

Agricultural Concept:

Marketing: Agriculture in the Media

Objective:

Students will become aware of the agricultural sections of the newspaper and agricultural marketing in the media.

Introduction:

Give each group of students a newspaper. Students compete to see which group can find the most agricultural articles. They mark each with a felt tip pen. (Set a timer for a few minutes.)

Activities:

1. Explain to students that the newspaper contains informational articles about agriculture, classified ads, and markets information (grain, livestock, tobacco prices, etc). Help students identify these sections in their papers.

2. Marketing is the exchange of goods and services between buyers and sellers. Introduce students to markets in which they might be buyers or sellers and have them identify which they would be: fast food restaurants, movies, newspaper delivery, Girl Scout cookies.

   Explain that marketing is important to farmers - they buy and sell many products. Help students determine what the farmer (e.g., beef cattle farmer) needs to buy (feed, machinery, fertilizer, veterinary service, labor, transportation, etc.) and what the farmer sells. How is the newspaper important to the farmer?

3. Have students study the Farm and Garden section of the classified ads or the Market Bulletin. Each group should prepare to explain orally which kind of classifieds (livestock, farm products, farm machinery) they find most interesting. Give students math problems using the classifieds. (Example: Find the least expensive horse for sale.)

Grade 5

Unit 4, cont.

Culminating Activity: Students develop ads or commercials promoting different South Carolina products. They will need to research the crop they are advocating.

Materials:

Timer
Newspapers and felt tip markers

Resources:

Amy Mikell
Newspaper in Education
Columbia Newspapers
P. O. Box 1333
Columbia, South Carolina 29202
(803) 771-8320

The Greenville News
P. O. Box 1688 - S. Main Street
Greenville, South Carolina 29602

The Charleston News and Courier
134 Columbus Street
Charleston, South Carolina 29402

South Carolina Market Bulletin (See Resource List)

Grade 5

Unit 5

KEEPERS OF THE LAND

Instructional Area:

Science
Social Studies
Language Arts
Art

Agricultural Concept:

Origin: Forest Products
Need: Forest Products/Conservation

Objective:

Students will recognize that many forest products are used in the school and will determine ways to conserve the forest for future production.

Introduction:

Mystery questions on the board: Could we have school without wood? Why or why not? Students briefly discuss the mystery.

Activities:

1. Lead students to realize that paper, pencils, books, wooden desks, parts of the school building, some musical instruments and baseball bats are products from the forest. Forestry is a very large industry in S. C.

2. Have students research with the aid of the media specialist the kinds of writing materials people used before paper and pencils. They might learn about clay tablets, skins, papyrus, hornbooks, slates, quills, the stylus, etc. (See illustration.) They might research the history or process of paper and pencil production.

3. For one week, have students save in a large paper box all waste paper generated by class activities. At the end of the week, lead a discussion on whether or not the class is wasting paper. Think of ways to save paper: write on the front and back; make note pads from leftover paper. Give each group some of the reusable paper; also bring in grocery bags, shoe boxes, magazines, milk cartons. Ask each group to list ways that the paper can be reused for art projects: collages, book markers, name tags, puppets, table decorations, etc.

Culminating Activity:

Set up or participate in a paper drive or have a forester to come in to discuss conservation.

Materials:

Waste paper from the class
Grocery bags, shoe boxes, magazines, milk cartons
Construction paper, markers, glue

Resource:

S. C. Forestry Commission (See Resource List.)

Grade 5

Unit 6

KEEPERS OF THE LAND

Instructional Area:

Science
Language Arts
Art

Agricultural Concept:

Origin: Interdependence/Relationships within an Environment

Objective:

Students will recognize the relationships between plants and animals and their environments and apply this concept to farming.

Introduction:

Why do farmers watch the weather report carefully? Take several answers and write them on the board.

Activities:

1. Talk about some environmental relationships that affect farmers. (Examples: The amount and the timing of rain affect crop growth. Hailstorms and insect invasions can severely damage crops. Forest fires destroy trees for wildlife habitat and forest products. Hard freezes at certain times can ruin peach crops. Extreme heat, cold, and drought can reduce the amount of milk dairy cows produce.) A Farmer's Almanac, science texts, and newspapers might be good resources. Students can write a paragraph about these relationships.

2. Have students make terrariums to observe the dependence of plants and animals upon each other. Layer fine gravel and charcoal, soil 3" or 4" deep, small plants and moss, water in a small dish sunken into the soil. Put water in the dish and sprinkle the plants with water. Add animals. Cover the terrarium tightly with glass or plastic. Place on a low shelf away from direct sunlight. Students can observe from day to day: the plant growth, the humidity in the terrarium, the animals eating plants and small bits of other food added.

3. Plants and animals in the world depend on each other and environmental conditions. How do farmers try to control the environment in production of food and fiber? Make a list on a bulletin board. (Farmers irrigate fields; they fertilize plants; they shelter animals; they plow firebreaks, etc.)

4. Let 6 students do a news broadcast on Friday. Pairs of students can work together collecting information and writing scripts for their category. Categories might be: state, national, world news affecting farmers, agricultural news, weather.

Culminating Activity: Students make a mural on butcher paper illustrating one kind of farm and the factors that affect it. (Example: peach orchard: rain, richness of soil, insects, diseases, weeds, temperature.)

Materials: Terrarium materials:

gravel or sand; charcoal; wood soil containing humus; small plants and seedlings; small saucer for water; rocks; pane of glass or plastic wrap/rubber band for cover; glass rectangular refrigerator dishes with covers, glass candy dishes, or wide-mouth jars for individual terrariums; animals such as snails, frogs, beetles if desired.

Butcher paper

Grade 5

Unit 7

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Math
Social Studies
Art

Agricultural Concept:

Need: Water
Management: Water as a Resource

Objective:

Students will identify the major uses of water (including agriculture) and will estimate their family's daily use.

Introduction:

Brainstorm 10-15 adjectives to describe water. Students can then write a haiku poem or a short paragraph on water.

Activities:

1. On a map of South Carolina, show students the major rivers and lakes. Survey how many students have seen each of these water sources. Have students make a relief map (clay or papier mache) showing these major sources.

2. Compare the 4 major users of water: electricity generation, industry, agriculture, and the public. Electricity generation uses about 4/5 of the 5.9 billion gallons of water South Carolinians use daily; industry, people, and agriculture use the rest. Students discuss what would happen if we did not have enough water? Who should get first use in a shortage? What are some ways we can save water?

3. Water is very important to the farmer. Like Goldilocks' porridge, the amount must be "just right." Too little water or too much can cause the farmer problems. Divide the class into groups. Give each group a problem (drought, erosion, flooding). Students have 2 days to find a possible solution and report back to class. (Some problems, such as too much rain, might not have solutions.)

4. Using the following information, each student will estimate his/her family's total use per day. (Show students a gallon milk jug as a reference point.)

Some common uses and amounts follow (rough estimates):

shower/bath - 21 gallons used per person on the average
toilet - about 36 gallons per day per person
clothes/washer - about 42 gallons per load
hand dishwashing - 20 gallons per day
automatic dishwashing - 12 gallons per load
brushing teeth - 2 gallons per person per day
shaving - 3 gallons per person
leaving the faucet running while drinking water - 5 gallons per person
washing fruits, vegetables - 4 gallons per day
cooking - 9 gallons per day

(Information from Water Resources Commission)

Culminating Activity: Ask: Why is water important? List all statements on the chalkboard. After the list is complete, discuss and make changes.

Materials: Clay or papier mache
Map of South Carolina with rivers, lakes

Resource: South Carolina Water Resources Commission

(A short film Water Follies is available for use from the Commission - address on Resource List.)

Grade 5

Unit 8

KEEPERS OF THE LAND

Instructional Area: Science

Agricultural Concept: Origin: Land Resources - Soil

Objective: Students will identify the composition of soil.

Introduction: Display 3 kinds of soil: sand, clay, and loam. Ask students to think about why these kinds of soil have different colors and textures.

Activities:

1. "What is soil?" experiment - Provide a soil sample which includes pieces of rock and organic material such as decaying leaves. Tell students their task is to discover what soil actually is made of; they examine the sample and write down their conclusions. Lead students to conclude that rocks form the base of soil. Over centuries rain, water, wind, plant roots, and freezing break down rocks into soil. The color of rocks determines the color of soil. Have students rub pieces of sandstone together and observe the soil made.

   Next, lead students to understand that decaying organic matter contributes to soil. Decaying protist, plant and animal matter is called humus. Students can infer that organic matter affects soil color and richness. (Microscopic creatures live in the soil, as well as insects and earthworms.)

2. Examine the soil samples again. (Loam is a mixture of sand, clay, and silt. Loam is better for growing things.) Have students describe the differences among these soils. They might use reference books for further information.

3. Bring in a bag of potting soil. Have students examine the bag to determine the composition of commercially - purchased soil.

4. South Carolina does not have very fertile topsoil as the Midwest does. When soil is not rich enough for "growing things" or if farmers want to return nutrients "growing things" took from the soil, what do farmers do? (Add fertilizer.) Explain the concept of nutrients.

5. Plants do not grow well in soil that is too hard and packed. Farmers sometimes use a huge sword-like plow (a subsoiler) to break up hard subsoil to let moisture through. Tractors have big wide tires to keep the weight of the tractor from packing the soil. How can home gardeners keep the soil loose? (hoeing, tilling, etc.)

Culminating Activity: Have students plant seeds or seedlings in pure sand, clay, and humus-rich soil. Have them explain the differences in growth.

Materials:

Soil samples/containers
rocks/hammer
seeds/seedlings
potting soil

Grade 5

Unit 9

KEEPERS OF THE LAND

Instructional Area: Math
Social Studies
Language Arts

Agricultural Concept: Marketing: A Class Food Co-Op

Objective: Students will develop an economic awareness of buying from a Farmer's Market in a co-op and from a retailer.

Introduction: Illustrate the concept that it is generally cheaper to buy in quantity. Bring a piece or bar of candy purchased individually. Also have a bag or pack of the same candy. Have students compare the prices per piece or bar.

Activities:

1. Introduce the concept of a food co-operative. Form a fruit and vegetable co-op with the class. Have a meeting to discuss what fruits and vegetables are preferred by the co-op members and to elect a president and a treasurer. If possible, take students to a real farmer's market. Their task is to select the most produce possible for their money; each student keeps a written account. (Students are not actually buying.) If not possible to visit a real market, divide the class into groups- farmers and co-op members. Get current market prices from the newspaper or from a teacher visit to the market. Students again attempt to get the most for their money for their group.

2. Have students use grocery ads to compare the grocery store prices with farmer's market prices. Why do you save more shopping at a farmer's market in a co-op? (Farmer's market is less expensive because of the elimination of a middle man; buying in bulk; lack of packaging and transporting costs.) Have them "buy" the equivalent of their individual share of the co-op produce at the grocery store.

3. Ask students: Do most farmers get all the money from the sales of produce? Where else does the money go? Explain that costs of producing the products must be subtracted from the amount gained from selling the products. Also, a farmer does not harvest everything planted. (80% is a good return.)

Culminating Activity: Have students write a paragraph indicating the advantages of a co-op.

Materials:

Play money (if desired)
grocery ads

Grade 5

Unit 10

KEEPERS OF THE LAND

Instructional Area: Social Studies

Agricultural Concept: Management: Land Resources: Where Crops Grow Best

Objective: Students will learn the general topography of South Carolina and the location of prime agricultural land. They will identify crops grown in the various locations.

Introduction: Show students the outline map and ask what it is. Tell them you're going to study South Carolina's land.

Activities:

1. Discuss the topography of South Carolina with students: the Mountains, Piedmont, Sandhills, Coastal Plain, Coast. Give students the assignment of finding out what crops grow best in each area (commercial production). Have them check South Carolina history texts and books on South Carolina in the library and ask their parents and other adults. Teacher can also give information as needed (Mountains-apples; Piedmont-peaches, cotton; Sandhills-pine trees; Coastal Plain-tobacco, cotton, row crops, etc; Coast-mariculture products.) The teacher might check with the local county extension agent for assistance. (Explain to students that some crops grow in most part of the state so that they do not think the best location is the only one.)

2. The teacher shows students the map of prime farm land, forests, urban areas. Teacher and students discuss the different uses of land and the importance of keeping farm land available for farming purposes. Use farm, conservation, environmental magazines for resources.

Culminating Activity: Divide the class into 5 groups and give each a designated region. Have groups design small flags (on 3" x 5" cards to represent various products. Place on the appropriate areas of a large state map.

Materials:

Copies of South Carolina outline map for each student
South Carolina map (topographic map if possible)
Prime farmland map available from Land Resources Commission (Resource List)
Farm, conservation magazines
3" x 5" index cards

Resource: County Extension Agent

Grade 5

Unit 11

KEEPERS OF THE LAND

Instructional Area: Art
Career Education

Agricultural Concept: Need: Farming Occupations (Agribusiness)

Objective: Students will recognize the number of careers available related to farming (agribusiness).

Introduction: Students each write down two or three careers they have thought about trying. Are any of them related to farming?

Activities:

1. For each major type of farm, display the names of related careers. (See Activity #5 and Resource List for examples.) Have each farm name on a card on the bulletin board. Students attach cards with career names to the farm card with yarn and tacks.

2. Play "charades" and act out occupations for teammates to guess. (Examples: fruit picker; dairy farmer hand milking cow; row crop farmer driving tractor; computer operator; worker cutting down a tree; worker pulling in a catfish; truck driver; entomologist studying insects; forester studying trees; agriculture editor writing news article; professor teaching agriculture courses, etc.) Discuss with students that most farm jobs are done by machines, but for "charades" they will need to dramatize those jobs. Show them pictures of some sophisticated farm machinery. Do dairy farmers really still milk by hand? (No, milking machines are used.) Do aquaculture farmers catch every fish by hand? (No, they have a system for draining the ponds.) Yet, point out that some farming operations do require hand labor (peach picking, tobacco harvesting).

Grade 5

Unit 11, cont.

3. Make posters of products from various farms. Create an art gallery of farms and have other students visit the class or put posters in the school halls. Label the posters "Which kind of farmer would you like to be?"

Culminating Activity: Make collages of people working at various farm-related careers.

Materials:

Farm journals, pictures
Yarn, tacks, cards
Construction paper, glue, posterboard
Exploring New Horizons ("Agribusiness and Natural Resources") -
contact Lynne Hufziger, State Department of Education, (803) 758-3241 (see Resource List)

Grade 5

Unit 12

KEEPERS OF THE LAND

Instructional Area:

Math
Social Studies
Language Arts
Science

Agricultural Concept: Management: The Farming Profession

Objective: Students will gain an awareness of the complexity of farming.

Introduction: Ask if anyone in the room would like to be a farmer. Why or why not?

Activities:

1. Introduce the concept of farming by having students define the word "farmer." Discuss the numbers of jobs a farmer really has in successfully bringing together the important components of (1) land and soil, (2) capital or money, (3) machinery and buildings, (4) crops and livestock, (5) human labor and (6) agricultural knowledge and skill.

2. Follow up by taking a real or simulated field trip to a farm. Ask students to obtain the following information through an interview with a farmer and workers:
   - (a) How is conservation being practiced on this farm? (erosion control, crop rotation, etc.)
   - (b) What are the various uses for each crop (or animal) produced on this farm? How are they sold (marketed)?
   - (c) Diagram the layout of the farm yard. Where are buildings in relation to each other and why are they where they are?
   - (d) How much does each product cost the farmer to grow and how have the past 3 seasons been in terms of production?
   - (e) What machinery is needed on the farm? What does it cost?
   - (f) How has modern technology helped (or changed) this farm operation?
   - (g) What is the history of this farm? Is it an intergenerational (passed down from one generation to another) farm or has it been acquired in another way?
   - (h) Get a sample from the field trip to represent what is grown on this farm and have a group of students prepare a display in the classroom about the farm.

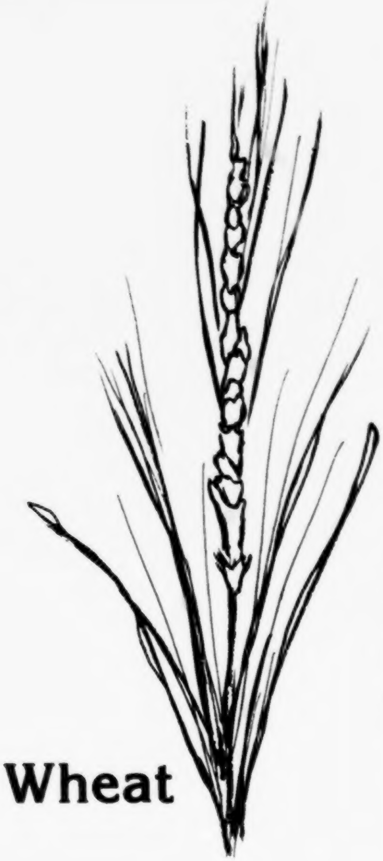
For the simulated field trip, the teacher might make modifications for a-d such as putting pictures of conservation practices on a poster for students to identify; designating certain crops for the pretend farm; showing slides or pictures of a farm layout; setting up simple math problems for (d) with product cost information; designating certain equipment and prices for (e). Omit (f) and (g). For (h) the teacher can have some sample crops or pictures for students to use in a display.

Culminating Activity: Have students make farm booklets, including the questions and answers, a sketch of the farmyard, and a creative expression page (poem etc.).

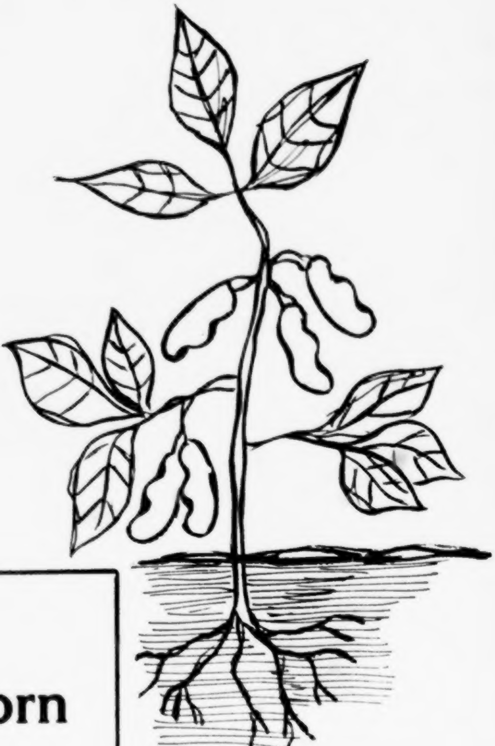
Materials:

Farm pictures
Slides
Sample crops
Posters
Resource Farming (magazine)

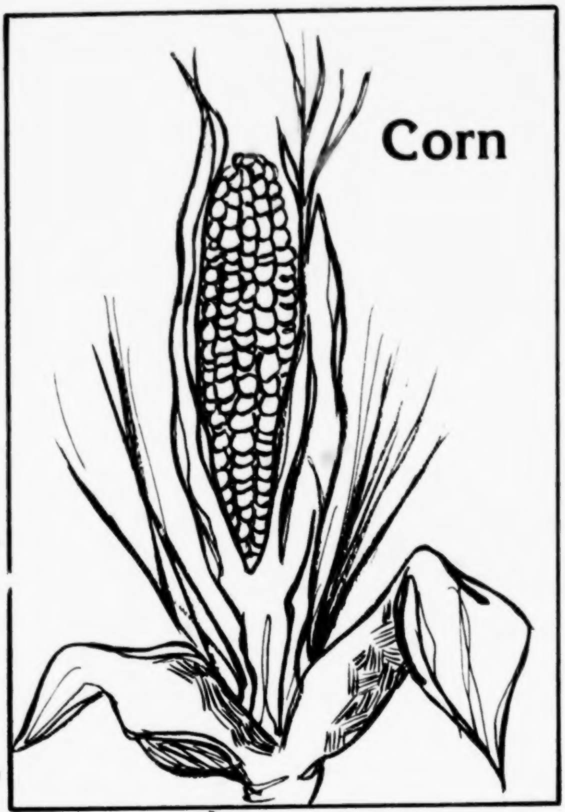
Note: There are approximately 6,000 female farmers in S. C.



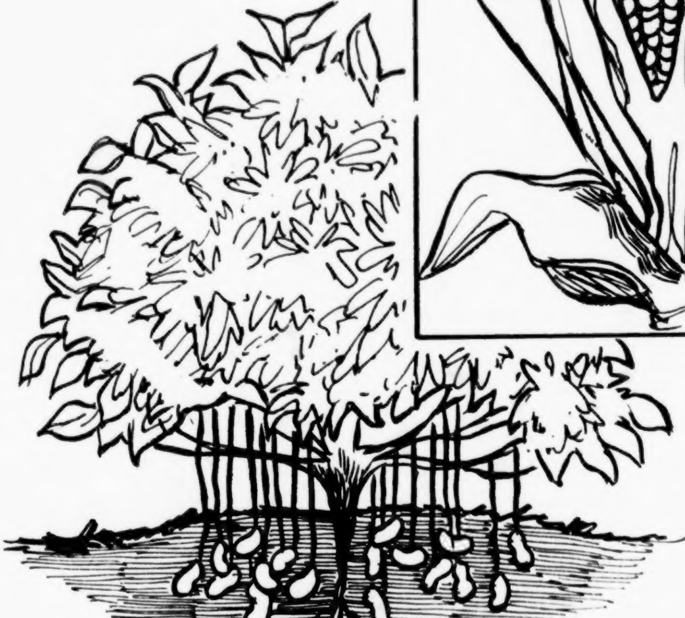
Wheat



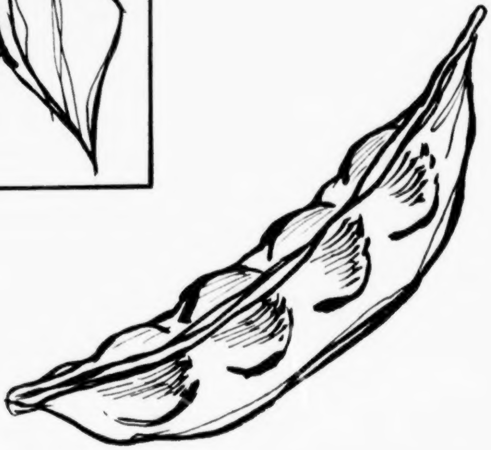
Soybean



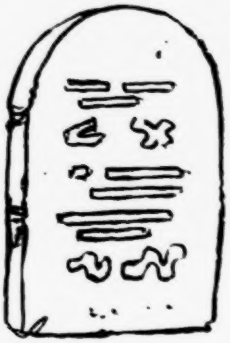
Corn



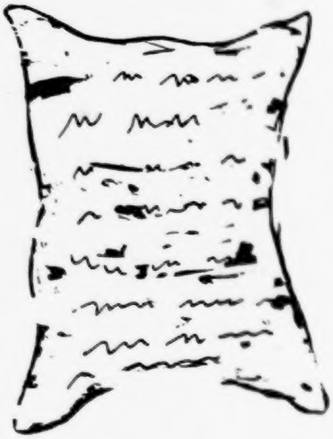
Peanut Plant



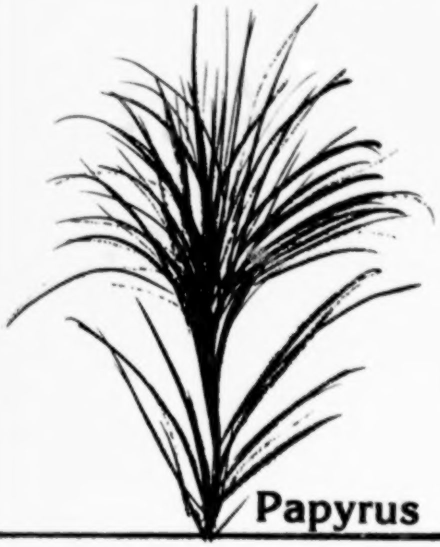
Bean



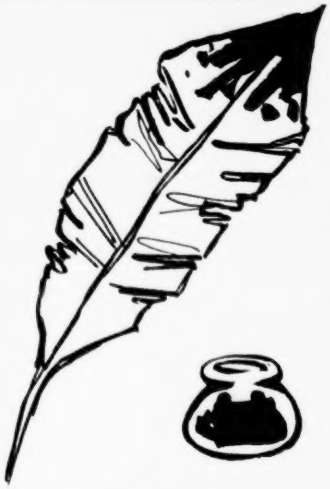
Clay Tablet



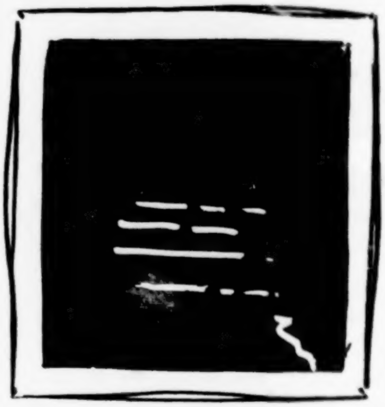
Skin



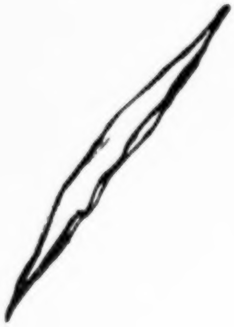
Papyrus



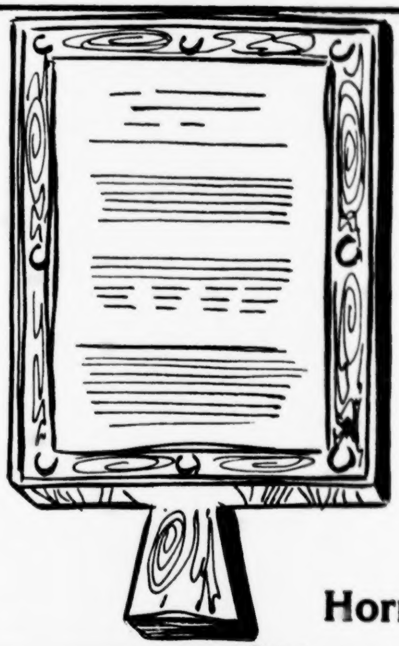
Quill



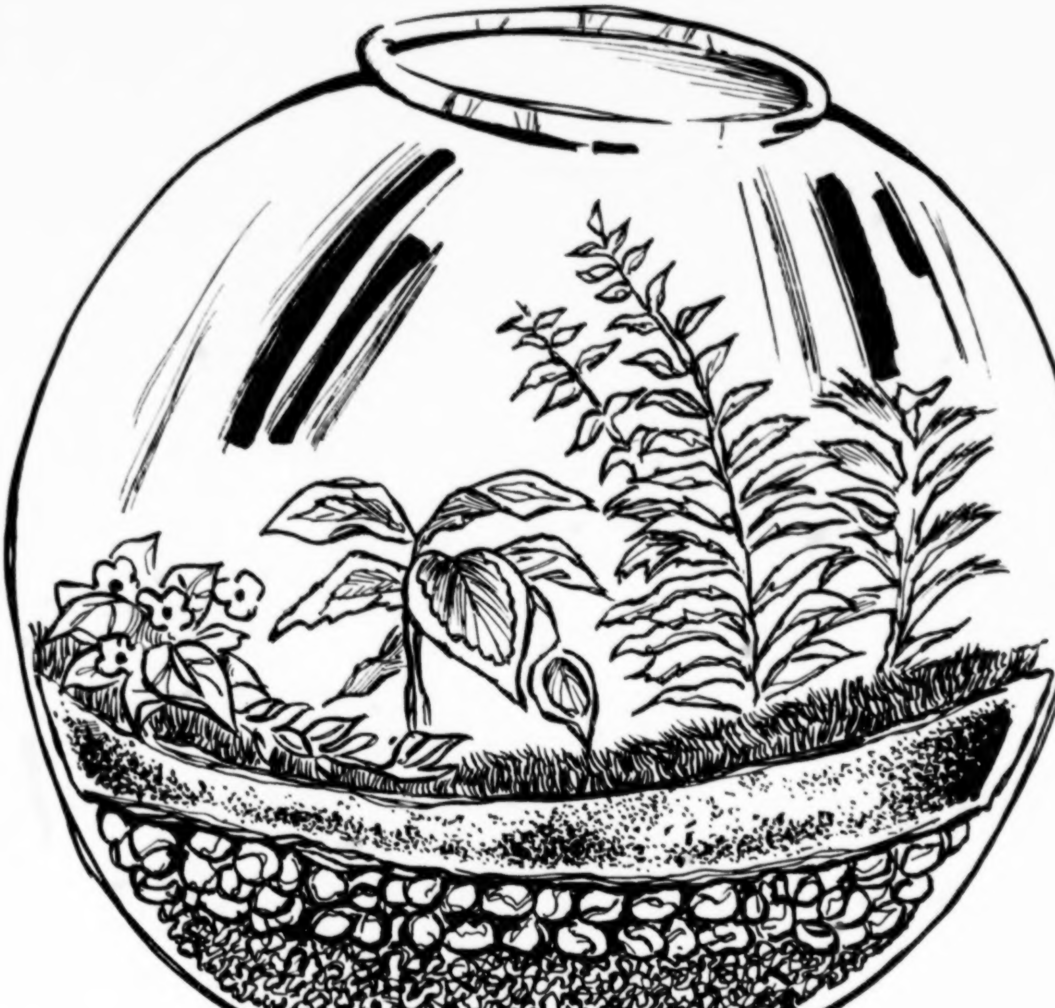
Slate



Stylus



Hornbook



Terrarium

KEEPERS OF THE LAND

AN AGRICULTURAL CURRICULUM FOR KINDERGARTEN - SIXTH GRADE

Developed by South Carolina Teachers
and the Curriculum Section
of the Office of General Education

State Department of Education of South Carolina
Columbia, South Carolina

Sixth Grade

PREFACE

"Agriculture is the greatest sole contributor to the affluence, the health, and the well-being of our society." Why Agriculture Is So Important
Ag in the Classroom
United States Department
of Agriculture

The national Agriculture in the Classroom effort is a means of providing support and reinforcement for educators in the task of leading young people to develop an awareness of agriculture. The program's goal is to give students a sound foundation of understanding about agriculture's importance to our country and our lives.

South Carolina's Keepers of the Land project is a part of that national thrust. The South Carolina Legislature, due to the efforts of Senator T. Ed Garrison, appropriated funds under the Education Improvement Act of 1984 to develop the program through the South Carolina Department of Education. Senator Garrison chaired the initial Task Force composed of representatives from the South Carolina Department of Agriculture, the Farm Bureau, the Land Resources Commission, the Forestry Commission, Clemson University Extension Service, the State Department of Education, and local school districts.

In August 1984, selected classroom teachers (grades K-6) from around the state met with leading farmers and other agricultural experts. The consultants spoke to the teachers on the many aspects of agriculture in South Carolina. The teachers then developed activity ideas which were edited by the State Department of Education. In 1984-85, the materials were piloted in 6 school districts: Anderson #4, Beaufort, Chester, Georgetown, Greenville (Southwest Area), and Spartanburg #6. Another teacher committee reviewed the results of the pilot in June 1985. The final guide was edited for distribution to elementary and middle schools in the state.

Many people and agencies provided inspiration, direction, and dedication for this effort. It is their hope that these activities help South Carolina youngsters develop a clearer understanding of agriculture.

Editor, Keepers of the Land curriculum
Dr. Susan Smith
Reading Consultant, Curriculum Section

Director, Keepers of the Land project
Dr. Beverly Enwall
Chief Supervisor, Curriculum Section

Joel Taylor
Director, Office of General Education

Dr. Ernest B. Carnes, Associate Superintendent
Sidney B. Cooper, Deputy Superintendent
Division of Instruction

Dr. Charlie G. Williams
State Superintendent of Education

AGRICULTURAL CURRICULUM COMMITTEE-TEACHERS (K-6)

Patricia Bernard
Aiken

Linda Eaddy
Orangeburg #5

Gail Eles
Aiken

Melanie Fagan
Chester

Janet Flanders
Aiken

Julie Hogue
Richland #1

Debra Jones
Aiken

Jane Jordan
Chester

Jan Joy
Lexington #5

Anita Kieslich
Sumter #17

Debra Locke
Spartanburg #6

Barbara Logan
Georgetown

Judy Maring
Georgetown

Linda McCombs
Sumter

Hampton Perry
Georgetown

Selma Perry
Beaufort

Marge Prioleau
Beaufort

Richard Revan
Spartanburg #6

Gail Richardson
Orangeburg #5

Lily Rollins
Greenville

Margaret Sidney
Aiken

Carol Stewart
Richland #2

Inez Washington
Beaufort

Charlotte Webb
Aiken

Kelli Wessinger
Chester

AGRICULTURAL CURRICULUM COMMITTEE-CONSULTANTS

Senator T. Ed Garrison
Anderson, South Carolina
Member,
Senate Agriculture Committee

Senator Harvey S. Peeler, Jr.
Gaffney, South Carolina
Member,
Senate Agriculture Committee

Rusty Darby
Chester

James Fisher
Eastover

Thomas Herlong
Johnston

Albin Johnson
Leesville

Mike Keisler
Gilbert

Laurie Lawson
Darlington

Clayton Lowder, Jr.
Oswego

David McGill
Lake City

Ben Oswald
Allendale

Ken Peeples
Columbia

Robert L. Scarborough
Eastover

Dwight Stewart
Sumter

Betty Lou Terry
Denmark

Larry Yonce
Johnston

S. C. Department of Agriculture
  Dr. Richard H. Jesse
  Peggie L. Davis

Forestry Commission
  Rhett Bickley

Water Resources Commission
  Chris Brooks
  Danny L. Johnson

Clemson Extension Marine Research
  Jack Whetstone

Land Resources Commission
  John W. Parris
  Cary Chamblee
  Charles Logan
  Von Snelgrove

Wildlife and Marine Resources Department
  Frank Taylor

OTHER CONTRIBUTORS

Grateful acknowledgement is also given to Bill Hughes, Farm Editor, The State newspaper; Dee Vickery and Gary Spires, Senator Garrison's office; Walt Lardner, Artist; Margaret Ehrhardt and Mary Griffin, Library/Media Consultants; Diana Caldwell, Secretary; Columbia Rotary Club; Farm Bureau; many staff of the Clemson Extension Service and other agencies throughout the state. Thelma Foxworth, Secretary, deserves special thanks for patiently and carefully typing the final document.

HOW TO USE THIS GUIDE

The agricultural curriculum is designed to supplement and enrich the regular elementary curriculum. The program teaches important agricultural concepts through the traditional subject areas. Thus, KEEPERS OF THE LAND is intended to be a valuable part of the total curriculum, not a separate curriculum.

Twelve units are provided for each grade level K-6. Each unit is correlated to one or more **instructional areas:** art, career education, environmental education, health, mathematics, music, language arts, physical education, science, social studies. Each unit also identifies an **agricultural concept** and a specific **objective** related to that concept. Four sets of agricultural concepts are addressed: origin, the sources of food and fiber; need, the necessity for a particular product; management, the operation of a farm; and marketing, the buying and selling of agricultural products. An **introduction,** a variety of **activities,** and a **culminating activity** (summary) offer interesting learning experiences for students. Also provided are **materials** needed and possible **resources.**

The program is flexible so that it can be used by any elementary teacher. Many of the activities go beyond the paper and pencil format and are especially appropriate for those teachers seeking alternative activities for motivating students. **Self-contained classroom teachers** might teach a unit a month (perhaps two per month in the fall or spring.) **Subject-area teachers** can select appropriate activities from the various units.

The curriculum also is compatible with the state's Basic Skills Assessment Program. Each kindergarten unit is keyed to the state objectives; also many activities at the other grade levels are correlated to the state reading, writing, and mathematics objectives.

The agricultural curriculum is also consistent with the Program for Effective Teaching. For example, the introduction can be modified into a set; the culminating activity can be used for closure; active participation is emphasized. A teacher can adapt the units to the lesson line structure.

This curriculum has a vital purpose, for America's future will be greatly affected by the understanding of agriculture her youth develop. Since it was written for elementary students and teachers by elementary teachers, the curriculum is a valuable resource for grades K-6 statewide.

KEEPERS OF THE LAND

SIXTH GRADE

TABLE OF CONTENTS

Unit I: Origin and Need: Forestry
Science; Art; Social Studies

Unit II: Origin: The Beginnings of Agriculture
Management: Land Resources
Art; Social Studies; Science; Mathematics

Unit III: Origin: Water Resources
Need: Water Resources
Art; Music; Mathematics; Science; Language Arts; Social Studies

Unit IV: Management: Land Use: Row Crops
Mathematics; Social Studies

Unit V: Origin: Row Crops: Cotton and Tobacco
Social Studies; Mathematics; Language Arts; Science

Unit VI: Management: Pesticides
Language Arts; Mathematics; Science; Health

Unit VII: Origin: Livestock: Beef and Dairy Cattle
Need: Different Varieties of Cattle
Mathematics; Language Arts; Social Studies; Health

Unit VIII: Management: Genetics
Science; Social Studies; Language Arts

Unit IX: Management: Review of Farm Types, Vocabulary, and Facts
Social Studies; Science; Language Arts; Art

Unit X: Origin: Food Around the World
Social Studies

Unit XI: Marketing: South Carolina Products
Language Arts; Social Studies

Unit XII: Marketing: Advertising and Packaging
Language Arts; Social Studies; Health; Art

NOTE: **A complete bibliography of agricultural resources (books, audiovisual materials, and agencies) is available in the school media center. Also available there is a complete set of activities (K-6).**

Grade 6

Unit 1

KEEPERS OF THE LAND

Instructional Area:

Science
Art
Social Studies

Agricultural Concept:

Origin: Forestry
Need: Forestry

Objective:

Students will become more aware of the importance of trees in South Carolina and of their various uses.

Introduction:

Introduce words deciduous and coniferous to students. Talk about trees in South Carolina and some of the products that come from trees.

Activities:

1. "Adopt-a-Tree" - Students will adopt a tree on the school grounds. The teacher will select assignments from the following activities: identifying the tree; giving it a birthday; estimating its age; measuring it; fertilizing it; studying its bark and leaves; writing a story, poem, or song about the tree; estimating its growth during the year; checking it for insects and diseases; researching the type of tree; drawing or photographing the tree; and deciding the importance their tree plays.

2. Invite a local forester in to talk about trees as a "crop." The forester might also explain how and why fire breaks are utilized and also why other crops (corn, soybeans, a hay called lespedeza) are planted in state forests. If a resource person is not available, materials are available from the Forestry Commission; or students may be given a reading assignment in the library to find out about trees as a "crop". The many uses of trees (including aesthetic and environmental) should be addressed. If possible, consider a field trip to a state forest, tree nursery, or fire tower.

3. Introduce careers related to trees: forest ranger, tree planter, machinery operator, fire tower worker, forest fire fighter, etc.

Grade 6

Unit 1, **cont.**

Culminating Activity:	Students choose one tree use and make a poster illustrating that use.
Materials:	Tree on school grounds (measuring device, fertilizer, camera as needed) Posterboard and crayons/watercolors
Resource:	South Carolina Forestry Commission (Resource List)

Grade 6

Unit 2

KEEPERS OF THE LAND

Instructional Area:

Art
Social Studies/Science
Mathematics

Agricultural Concept:

Origin: The Beginnings of Agriculture
Management: Land Resources

Objective:

Students will recognize that civilizations developed when people learned to farm; today America's abundance depends upon agriculture.

Introduction:

Ask students if anyone has ever heard of the Dust Bowl. Take guesses as to what it was. Tell students they are going to learn about it and about taking care of our land.

Activities:

1. Have students make a mural illustrating the development of a civilization: learning to plant crops, taming animals, building cities, developing technology (the wheel, irrigation), making intellectual achievements like a system of writing, trading with others, developing a government, and producing advanced art (Source: Scholastic social studies series Our World Today). Students should begin to understand that early mankind spent much time/energy looking for food.

2. Explain to students about the Dust Bowl of the 1930's. Talk about how overgrazing and overcultivation resulted in great dust storms in the Midwest as topsoil was blown away. Point out that life depends upon the rich top layer of soil--the topsoil. Have students think of ways to conserve our soil (plant cover, correct plowing to prevent erosion; use of prime farmland for farming and not development, etc.).

3. Have students study the want ads or Market Bulletin for farm land for sale. Students will calculate the cost of the land.

4. Have students solve problems such as the following:
   a) 118 peach trees may be planted on one acre. How many peach trees can a farmer plant on 6.5 acres?
   b) A farmer grew 92.36 bushels of wheat an acre. How much wheat was produced on 150 acres?

Culminating Activity: Invite someone from the local Soil Conservation Service to talk to the students about using our soil wisely.

Materials: Butcher or chart paper for mural, crayons, markers
Want ads or Market Bulletin

Resource: Soil Conservation Service (see phone book)

Grade 6

Unit 3

KEEPERS OF THE LAND

Instructional Area:

Art/Music
Mathematics
Science
Language Arts
Social Studies

Agricultural Concept:

Origin: Water Resources
Need: Water Resources

Objective:

Students will learn about our rivers and will research various water problems in the state.

Introduction:

Ask students to think about where the water they drink comes from. Point out that there is water on the surface of the earth and also underneath.

Activities:

1. Discuss South Carolina rivers and how weather affects the amount of flow. Student groups will use a South Carolina map to form a relief map of South Carolina and its major rivers. Students will learn about the characteristics of the rivers, direction of flow, diversion for dams, or other appropriate information. OR set up a class watershed model. What causes clear or dirty water? How are streams born and lakes formed?

2. Students will measure rainfall for at least a month. They will record the amount daily on a chart. (They can check their records with the TV weather reports at night.) They will graph average rainfall for each week. How does drought affect the farmer? (Crops need various amounts of water during the different stages of growth. Subsoil moisture is important.)

3. Students can study various water problems (pollution by industry; what groups should have first access to water if there is a shortage-electric companies, industry, agriculture, or the public; putting dams on rivers). Students will select one problem and design a set of "laws" for water protection. (S.C. now has a state drought response plan.)

4. Incorporate into the school music program songs about water (rivers and other waterways, rain).

Culminating Activity: Students will write haiku (poems) about the beauty, importance, or conservation of water.

Materials:

South Carolina maps, papier mache', board for relief map, base, paint, brushes, labels, colored pens, library materials, pan, water
Rainfall measuring device
Chart, graph paper

Resource: South Carolina Water Resources Commission

A booklet: Our Water ....It's Too Valuable to Waste is available. (See Resource List in media center.)

Local newspapers/magazines

Grade 6

Unit 4

KEEPERS OF THE LAND

Instructional Area:

Mathematics
Social Studies

Agricultural Concept:

Managing: Land Use (Row Crops)

Objective:

Students will learn that farmers plant as many plants as can grow in a given area; farmers try to harvest as large a yield as possible within that area.

Introduction:

Draw a large square on the board. Tell students this is one acre. Then write along the side how many feet that is (about 209 feet per side). Ask how many melons a farmer can grow on this one acre. Some students may be alert enough to ask, "How far apart do they have to be?"

Activities:

1. Pass out some seed packets of different kinds to small student groups. Let them read on the back how far apart these particular seeds need to be planted. Each group must determine how many rows and how many plants per row they could get on a given plot. Vary dimensions (ex. 20' x 20') After they have gotten their answers, rank on the chalkboard the produce "most per plot" down to "least per plot".

2. Give each group a centimeter ruler and let them measure and report the sizes of each variety of seed you gave out. Tell them to measure the seeds to the nearest centimeter. Do the sizes of the seeds determine the sizes of the plants? (No) The space plants will need? (No)

3. Students might plant some small plants in oblong containers (or outside). Plant one set as directed on the package. Plant the other set very thick (overplant). Have students compare growth.

4. Let students find in newspapers the prices of their product. Help them realize that farmers must sell large numbers of products to make profits. Many factors in addition to amount of land planted affect yield (weather, seed quality, fertility of soil, etc.)

5. Let each student have a piece of graph paper and draw a scale garden 100 feet x 100 feet and plant 3 row crops. Let them express in fractions how much of the area they decided to plant in each crop and why. (South Carolina's most important row crops are cotton, soybeans, tobacco, corn, peanuts.)

6. Teach area and perimeter concepts using various problems focusing on a farmer's field.

Culminating Activity: Divide students into pairs. Have each student tell his partner what he learned from this unit.

Materials:

Packets of various fruit/vegetable seeds
Graph paper for each child
Metric rulers
Newspapers

Grade 6

Unit 5

KEEPERS OF THE LAND

Instructional Area: Social Studies
Math
Language Arts
Science

Agricultural Concept: Origin: Cotton and Tobacco

Objective: Students will study the history of cotton and tobacco production and the general impact of these industries.

Introduction: Involve students in a discussion of what they know about cotton and tobacco production. Elicit information on planting, harvesting, marketing.

Activities:

1. Develop a time-line along with a mural which coincides with the major events in the history of cotton production in South Carolina and the United States. Have students write a brief composition tracing the history of tobacco production in South Carolina and the United States. Have students indicate on a world map where both crops are grown over the world (red tacks for one, green for the other). Tobacco is grown in Brazil, Zimbabwe, Turkey, Canada, Malawi, South Africa, etc. Cotton is grown in the Soviet Union, China, India, Pakistan, Brazil, Mexico, etc.

2. Students will develop a chart of the amount of cotton in a garment from the labels of a selected number of clothing items. Each student will list the article; type of material; percent, fraction, and decimal equivalents of cotton for each article. Example:

	type of material	percent	fraction	decimal
shirt				
pants				

3. You might also discuss different types of cotton cloth: percale, muslin, corduroy, terry cloth, seersucker, denim, cotton knit. Show samples if available.

4. Students can develop a list of interesting questions about tobacco production based on facts they have learned. Tobacco seed are tiny like celery seed (350,000 seeds in an ounce). They cost about $560.00 a pound. One ounce of seed can provide plants for from 6 to 20 acres. Tobacco must be planted in beds to protect the tender plants from frost; plants are then transplanted to the fields. The growing procedure is complicated. The leaves are picked from the bottom up. Flue-cured tobacco is grown in South Carolina; it must be cured by artificial heat.

5. Have students discuss the issues in tobacco production (number one cash crop in South Carolina, smoking and health debate, etc.).

Culminating Activity: Students make word search puzzles using words from cotton or tobacco production. Classmates exchange puzzles.

Materials:

Poster paper and markers
Ruler
Library research
(history books, encyclopedias, reference materials)

Resources:

County Extension Agent
National Cotton Council (Resource List)
Tobacco Institute

Grade 6

Unit 6

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Mathematics
Science
Health

Agricultural Concept: Management: Pesticides

Objective: Students will learn that pesticides are one method used to protect our food and fiber and homes, but that they must be used safely.

Introduction: Ask students "How do farmers get rid of pests like weeds?" Review with students the three kinds of pest control (mechanical, biological, and chemical). See Grade 5 activities in media center. Also review terms insecticide, herbicide, toxic, pesticide.

Activities:

1. Have students survey people in the community by phone or in person. They may wish to interview parents, neighbors, farmers, business people, exterminators to determine what pesticides are most commonly used in the area, how often, and for what purpose. The teacher will aid students in compiling their data.

2. Also have students ask farmers or exterminators how pesticides should be used to ensure safety. Have students write paragraphs about their safe use. Teach students the 3 mistakes often made with pesticides: improper storage, improper mixture and application, and wearing improper clothing when using them.

3. It is estimated that food losses without crop protection would be: wheat-70%; soybeans-50%; corn-60%; apples-100%; potatoes-100%; melon-45%; lettuce-96%; strawberries-94%; tomatoes-70%; and sorghum-50%. Students can make bar graphs showing this information.

4. (Optional) Hold a discussion in which students argue the advantages/disadvantages of biological and mechanical control vs. chemical control. Students will have to research the issue carefully before the discussion. (Increasingly, experts support integrated pest management, a combination of all kinds of pest control, or systems approach.)

Grade 6

Unit 6, cont.

Culminating Activity: After discussion of the reasons pesticides are needed and of the hazards of pesticides, have students take a "pro" or "con" stand on whether or not pesticides should be used as extensively as they are now. Students must back their opinions with facts.

Materials: Graph paper, posterboard, markers

Resources: Information available from National Agricultural Chemical Association and chemical companies. See Resource List in media center.

Environmental journals

Progressive Farmer or other farm journals

NOTE:

Mechanical: Machines can be used to harvest the weeds.

Biological: Beetles, fish, or other insects/animals which eat the weeds can be used.

Chemical: Pesticides (herbicides) or "materials which kill plants" are put into water.

Grade 6

Unit 7

KEEPERS OF THE LAND

Instructional Area:

Math
Language Arts
Social Studies
Health

Agricultural Concept:

Origin: Livestock: Beef/Dairy Cattle
Need: Variety of Cattle

Objective:

Students will learn that cattle are used for dairy and beef purposes and will recognize the varieties of cattle in the state.

Introduction:

Students will be assigned the task of studying the newspaper for several days and finding articles on beef/dairy activities in the state.

Activities:

1. Students will be grouped into fours and assigned:
   a) a specific cattle breed for research (where the breed originated, how popular the breed is in South Carolina, its strengths and weaknesses) OR;
   b) the beef/dairy industries (how large the industries are, where these farms are located, what kind of land and facilities are needed to raise cattle). The group will prepare a brief oral report for the class on their topic.

2. Students will use the information from the reports to locate on a world map the place of origin of breeds used in South Carolina.

3. Students will rank the dairy breeds and the livestock breeds separately on the basis of their numbers in South Carolina. Then students will make circle graphs, using fractional parts with that information, one for beef and one for dairy.

4. If this activity is used near County Fair time, students might visit the cattle barns and attempt to identify the breeds represented there.

5. Have a local 4-H leader explain how a boy/girl can raise a calf to show in the 4-H program. Discussion should include the different types of food and supplements needed to raise healthy cattle.

6. Students will study the different kinds of beef products. They might have as a homework assignment to write down as many products as possible found in the grocery store/butcher shop. The teacher might show a chart (if available from a butcher) illustrating the different cuts of meat and their location on the animal. (Nutrition information, such as the importance of lean red meat as a protein source, might also be shared.)

Culminating Activity:: Each student chooses his/her favorite cattle breed and tells why.

Materials:

Information about cattle breeds (dictionary, encyclopedia)
Information about livestock/dairy farming
(ex. Southern Beef Producer magazine)
Chart of beef cuts (from butcher)

Notes:

1. Cattle Breeds (approximate percentage of total herds in South Carolina)

Dairy

Holstein - (originated in Holland)-70% (7/10)
Guernsey - (developed on island of Guernsey from French stock) -10% (1/10)
Jersey - (from island of Jersey in English channel) -20% (2/10)

Beef

Angus - (originated in Scotland) -40% (4/10)
Polled Herefords (England) and Santa Gertrudis (Texas) -30% (3/10)
Simmental (Switzerland) and Other Breeds - 30% (3/10)

2. Other beef breeds include Charolais, Brahman, Limousin, and Brangus.

Resources: Local 4-H Leaders or County Extension Service Agent

Grade 6

Unit 8

KEEPERS OF THE LAND

Instructional Area: Science
Social Studies/Language Arts

Agricultural Concept: Agricultural Management: Genetics

Objective: Students will learn the basic rules of genetics and their application to agriculture.

Introduction: Two days ahead ask students to bring snapshots of their family members to class. Have students write their own names on the back of photos (so they can be returned to them) and hand them in. The next day have them displayed in 3-4 locations on tables or in chalkboard trays with an identifying number. Let students go around and write down to whom they think the relatives belong. Let students "self-correct" as you read the right answers.

Activities:

1. Discuss how students made their decisions. What kinds of features are "alike"? Do girls or boys in the class look like their fathers? or mothers? or other family members?

2. From a science book, present a simple lesson on basic genetic laws introducing (a) the term genetics, (b) genes/chromosomes, c) dominant and recessive genes, (d) possible offspring. Biology texts should have some simple examples of possible offspring from a certain pair of parents. Students can guess what they think offspring might look like before the teacher gives them the characteristics of possible offspring.

3. Explain that scientists work at research centers to improve animals and plants for particular agricultural purposes. Some examples are: dairy cows that produce more milk, beef cattle that are heavier and leaner, faster-growing pine trees, crops that resist various diseases.

   Discuss: If students wanted to improve watermelons, what would be desirable traits to develop? If students wanted to breed horses, what would be desirable traits? (They must decide on the purpose for the breeding.)

4. Let students as small groups (3-4) choose a South Carolina product-cotton, cattle (dairy or beef), swine, poultry, corn, soybeans, crawfish, shrimp, trees, quarter horses, Arabian horses. Make a study using both research (interview/letter) and their own ideas to report on how their product a) has been improved and b) will be further improved through applied genetics to develop the strain. Reports should be shared and/or displayed.

Culminating Activity: Have students summarize what they have learned about genetics in a brief class discussion.

Materials:
Photos from students
Basic genetic information from science books
Research materials
Addresses of resource people
(See Resource List in Media Center)

Grade 6

Unit 9

KEEPERS OF THE LAND

Instructional Area:

Social Studies/Science
Language Arts
Art

Agricultural Concept:

Management: Review of Farm Types, Vocabulary, and Facts

Objective:

Students will increase their knowledge of a particular type of farm operation and will review farm vocabulary and farm facts.

Introduction:

Ask each student to name his/her favorite type of farm and tell why it is interesting.

Activities:

1. Students choose one type of farm to study: poultry, livestock, row crop, orchard, dairy, aquaculture. They can work in groups or as individuals. With the assistance of the media specialist, they can collect information about their farms. Also, if possible in your area, have students write a local farmer a business letter asking specific questions about his/her particular farm (How many people does it take to run the farm? Do migrant workers assist the farmer at certain times of the year? Are computers used on the farm? If irrigation is used on the farm, what kind is it? What kind of machinery is used? What time of year is busiest, etc.) Have groups or individuals make posters depicting their farm.

2. Have students make a simple gameboard "Farm Trivia" (or use a teacher-made one). The purpose of the game is to arrive at the winner's space first by correctly answering questions about agriculture. Also have students submit questions and answers to the teacher. (How are peanuts grown? What is aquaculture? Is a pig a type of poultry? etc.) Allow for some free spaces on the gameboard and for some traps (boll weevils, back 2 spaces). Students use the spinner, move spaces, choose a card from the pile and answer the agricultural question (cards have question on front and answer on back). If a student gives the wrong answer, he/she moves back 3 spaces.

Grade 6

Unit 9, cont.

Culminating Activity:	Have students make a word search or crossword puzzle using farm vocabulary. Copies can be made and exchanged.
Materials:	Posterboard Resource books, encyclopedias (See Resource List) Graph paper for puzzles

Grade 6

Unit 10

KEEPERS OF THE LAND

Instructional Area: Social Studies

Agricultural Concept: Origin: Food Around the World

Objective: Students will become more aware of the origins of food they eat and the variety of foods eaten around the world.

Introduction: Have each student identify two favorite foods. What plant/animal does it come from? Where is it produced? Do children in other countries eat that food? (Point out that not everyone in the U.S. eats the same foods either.)

Activities:

1. Put a list of 10-15 foods on the board, including those which are and are not commonly produced in South Carolina. (Coffee, olives, sugar, coconuts, papaya, lettuce, oranges, etc., are not common). Students are to make a chart of the foods checking which ones are produced in South Carolina (to sell commercially) and which are not. Students then must find out where the other foods are grown most commonly.

2. Students in groups choose a country from the social studies textbook and find out what foods are popular in that country. Discuss with students why those foods are popular. Also discuss where different groups obtain their food: do other countries have many supermarkets like those in the United States? Explain the concept of the town market. Most towns in other countries have a market like our farmer's market where farmers bring their products. Point out that specialty shops such as the bakery, cheese, butcher, and pastry shops, etc., are popular in some countries like France.

Culminating Activity: If you live in a city, have students study the yellow pages to determine how many different kinds of restaurants are available (Chinese, Mexican, etc). If you live in a more rural area, bring in some cans or jars of foreign foods to show children, or if possible let them sample some foods.

Materials:

Chart paper
Social studies text
Yellow pages from phone book
or samples of foreign food

Grade 6

Unit 11

KEEPERS OF THE LAND

Instructional Area: Language Arts
Social Studies

Agricultural Concept: Marketing: South Carolina Products

Objective: Students will learn about creating a market for agricultural products.

Introduction: Tell students that a few years ago some South Carolina mariculture experts experimented with growing eels. The experiment was not successful. One reason was that eels grow at different rates, and the larger eels then eat up the smaller ones. Let students try to deduce the other reason. (We don't eat eels in U.S. They would have to be shipped to where there is a market--Orient, Europe.)

1. List some South Carolina products on the board: beef cattle, eggs, poultry, horses, milk, milk products, cotton, peanuts, soybeans, corn, melons, tobacco, peaches, lumber, crawfish, catfish, shrimp, tomatoes, swine. Let students each, on a piece of paper, "rank" the products for "easiest to sell" to "hardest to sell", in terms of people's wanting or needing the product. Write on the chalk board **Easy to Sell** and, through discussion, come up with class agreed-upon ranking.

2. Introduce the concept of supply and demand. If people want the product, it is in demand. Farmers want to increase the demand for their particular products. This concept of supply and demand also affects the farmer's profit. If a large quantity of a desired product is available, prices will be lower. If a small quantity is available, prices will be higher.

3. Now look at the list in terms of exports. Are some of these not suitable to send to other areas? Which? Why?

4. Now let students in small groups, each assigned a product, research and think through themselves a report on
    - a) special problems in marketing the product
    - b) how the product is marketed today (from farm to consumer--the whole process)
    - c) how it might be better marketed.

Culminating Activity:

Divide the class into teams of four. Each team will develop an innovative new product, complete with its packaging, price and advertisements. When products are "ready", the class will have a "sale" or "auction". Each student will have an "allowance" (of paper money). Teams will then total their earnings.

Materials:

Paper money for final activity, if desired
Current resource materials for research from state product boards, etc. (See Resource List for State Department of Agriculture address.)

Grade 6

Unit 12

KEEPERS OF THE LAND

Instructional Area:

Language Arts
Social Studies
Health
Art

Agricultural Concept: Marketing: Advertising and Packaging

Objective: Students will become aware of the importance of advertising and packaging in promoting products.

Introduction: Ask students *why* they buy certain foods: hamburgers, cereals, soft drinks. Talk about the impact of advertising on their lives in many ways, but focus on food.

Activities:

1. Each student selects an agricultural product to sell. Have students examine the *Market Bulletin*, newspaper, or farm journals for product advertisements. Students then design a creative advertisement for their product. Instead of an advertisement, the students might write an article to promote a relatively new product, e.g., kiwifruit or crawfish, or the group might invent a new product. *Or* students might role play a television ad for their products.

2. Have students bring in boxes of their favorite cereals. Students can discuss the commercials, promotional offers, and prizes used to sell that cereal. The teacher might teach the students various propaganda techniques: (a) "Bad names"- "Where's the beef?" arouses distaste for the competitor's hamburgers; (b) Glad names-Pleasant words are used to create good feelings; (c) Plain Folks-We're just like the folks next door, just like you; (d) Transfer- Use this toothpaste or shampoo and you'll be beautiful and popular; (e) Testimonial-Athletes and actors like it; (f) Bandwagon-Everyone is doing it; (g) Card stacking- Only one side is presented or only advantages are given.

   Further, students can compare the nutritional value of their cereals. How much sugar, for example, does each contain?

Culminating Activity:

Have different food packages available (egg carton, can, package from frozen food). Students in groups choose a food and design a better package. They might consider the packaging material, shape, written information on the package, picture of the food, if appropriate.

Materials:

Market Bulletin, newspaper, or farm journals
Several food packages
Cereal boxes

RESOURCES

A Poem - "Conservation's New Frontiers" Page 1

Audiovisual Materials Page 2

Resource Materials (Books) Page 10

State Resource Agencies/Associations Page 20

National Resource Agencies/Associations Page 22

A Story - "The Week We Almost Lost Our Christmas" Page 24

For the Teacher

CONSERVATION'S NEW FRONTIERS

Moon dust sifts to prairie dust
        and we must learn or lose the fight,
beat the spears to pruning hooks
        and melt the missiles in their flight.
Before I leave these lands, I'll give away
        a special place, close to my heart...
we should take something of the past,
        what traveler sails without a chart?

This farm is some small part of me,
        I've worked it, helped it to survive...
along with beasts and birds that feed
        on this earth's fruits to stay alive.
Now mine to hold, then theirs to love,
        the only perfect gift I give
to little ones who bear my name
        and, someday, will come here to live
accepting the stewardship of earth,
        of patchwork quilt of sand and clay
where greenish woods embrace the fields
        and curtain night from breaking day.

Upon the shining sea of wheat
        wind curls a master wave of seed...
birds skim along and turn and bank
        then dive into the depths to feed.
Far in the distance, dark trees bend
        to make a shoreline on the sky,
and then a tractor comes in sight
        pulling a reaper, standing high.
Behind them now, the curl is gone...
        but sunlight lives in each bright grain
for bakeries to mold and shape...
        the close-cut earth yields life again.

Use new found knowledge to bring rains,
        not to blow ashes from the sky,
the new frontiers of space research
        should show some of the how and why...
teach man the seasons are his measure,
        give the earth to one who cares
and use our "high tech" skills to shape
        the laser swords to new plowshares.

Roberta Mathis
Fine Arts Coordinator
Sumter County School District Two
Sumter, South Carolina

AUDIOVISUAL MATERIALS FOR AGRICULTURE COURSES

FILMSTRIPS:

1. At Home in the City and on the Farm. (Living on Man's Earth series) Britannica. Captioned Filmstrip. Color, $18.00.

2. At Work on the Farm. (Living on Man's Earth series) Britannica. Captioned Filmstrip. Color, $18.00.

3. Learning About Animals. Encyclopedia Britannica. 12 Shortstrips. Color. $29.50.

SOUND FILMSTRIPS:

1. Animal Friends. SVE, 1957. Color. Set of 4 filmstrips and cassettes $98.00. Grades: Kindergarten.

   Hide Away Puppy, Chester, The Little Pony, Little Mailman of Bayberry Lane, Mr. Bear's Horse.

2. Animals on the Farm. Animals in Verse series. SVE, 1977. Color. 57 Frames, 7½ minutes. Filmstrip $21.00. Cassette $14.00. Grades K-3.

   A visit with useful animals that live on the farm.

3. Baby Animals Grow Up. SVE, 1984. Color. 33 Frames each, 6 minutes each.

   All about animals' food, homes, enemies and seasonal activities. Set of 6 filmstrips and 6 cassettes $188.00

4. Baby Animals in Rhyme and Song. BH 20169-03. Farm Animals in Rhyme and Song Series. SVE, 1984. Color. 48 Frames, 7½ minutes. Filmstrip $21.00. Cassette $14.00. Grades K-3.

   Encourages children to categorize animals, i.e., farm animals.

5. The Three Little Pigs. SVE, 1966. Color. 44 Frames, 10½ minutes. Filmstrip $21.00. Cassette $14.00.

6. Don't Count Your Chicks. Weston Woods. Color. 38 Frames, 6 minutes. $20.00. Grades K-3.

   Presents the story of the old woman who counted her chickens before they hatched and illustrates the fun of a day in the country with chickens, cats, dogs, and other animals.

7. Farm Animals. Imperial Educational Resources. Color. 4 Filmstrips, 4 cassettes $90.00. Grades K-3.

   Gives a close-up look at pigs, sheep, fowl and cattle--showing their physical characteristics, what they eat and how they spend their time.

8. Food: A Basic Need. Encyclopedia Britannica. Color. $108.00. Grades K-1. 4 sound filmstrips: 1) Everybody Needs Food, 2) From Farm to You: Food From Plants, 3) From Farm to You: Food From Animals, 4) Foods Around the World.

9. From Spring to Spring: Plant Survival. SVE, 1976. Color. 56 Frames, 7 minutes. Filmstrip/Cassette. $35.00

A year in the life of a plant.

10. Johnny Crow's Garden. by Leslie L. Brooke. Weston Woods. Color. 28 Frames, 4 minutes. $20.00.

Many animals visit the garden that Johnny Crow planted.

11. Life on a Farm. by Ingri D'Aulaire. Encyclopedia Britannica Educational Corporation, 1977. 4 Filmstrips, 4 cassettes. Color. $108.00. Grades K-3.

Follows the daily work schedule of farmers and their children.

12. Mary's Easter Lambs. SVE, 1959. Color. 38 Frames, 15½ minutes. Filmstrip cassettes $35.00.

Young lambs on the farm.

13. Mrs. Hen's Easter Surprise. SVE, 1959. Color. 44 Frames, 8½ minutes. Filmstrip cassettes $35.00.

A duck hatches with the chicks.

14. My Ranch Home. Britannica. Color. 1 Filmstrip, 1 cassette $30.00.

15. A New Tree for Arbor Day. SVE, 1974. Color. 65 Frames, 8 minutes. $35.00. 1 filmstrip, 1 cassette.

16. Plants: How They Live and Grow. SVE, 1976. 45 Frames, 8 minutes. $149.00 (4 filmstrips, 4 cassettes).

The great diversity of the plant kingdom.

17. An Introduction to Plants. SVE, 1964. Color. 53 Frames, 12½ minutes. $49.00 per set; 1 filmstrip, 1 cassette.

How plants grow, produce food and reproduce.

18. Johnny Appleseed. SVE, 1983. Color. 30 Frames, 30 minutes. $35.00 per set; 1 filmstrip, 1 cassette.

Story of the man who planted apple orchards in Ohio.

19. Plants: Source of Life. SVE, 1977. Color. 43 Frames, 7 minutes. $198.00. 4 filmstrips, 4 cassettes.

The interdependency of plants and animals for survival.

20. School Children in the USA. E006D - School in the Southeast. Eye Gate Media. P. The geography and personality of the region, including the work and life styles of the community. $30.00.

21. The Southern States X318 Geography, Climate, Resources. 318D Industry, Agriculture, Commerce. Eye Gate Media. $30.00 ea. I,J. South Carolina is included.

22. The Story of Great American Inventors. E829D McCormick, Deere and Glidden: inventors in agriculture. Eye Gate Media. $30.00. I,J. The students see how such inventions as the cotton gin changed the life of the South.

23. The Three Little Pigs. Children's Stories series. SVE, 1966. Color. 44 Frames, 10½ minutes. Filmstrip $21.00. Cassette $14.00. Grades K-3.

24. Treasury of Animal Stories. by Beatrix Potter. SVE. 1975. Color. 33 Frames, 9¼ minutes. $129.95. 4 filmstrips and 4 cassettes.

25. Treasury of Nursery Rhymes. SVE, 1963. Color. 96 Frames, 12 minutes. $129.95. 4 filmstrips, 4 cassettes.

23. United States Geography: Agricultural America. Encyclopedia Britannica, 1979. Color. $30.00. 1 filmstrip, 1 cassette.

A SUGGESTED LIST OF 16mm FILMS AVAILABLE THROUGH VARIOUS PRODUCERS:

1. About Cats. (No. 10622.) 12 Minutes. K-6. Gold Medal Award; proper care. Ralston Purina. Modern Video Center, 5000 Park Street, St. Petersburg, Florida 33709. Return postage.

2. Bread. 2nd Edition. EBEC. K-6. P-I. 11 Minutes. Shows the process of bread making. 425 N. Michigan Avenue, Chicago, Illinois 60611. 1972.

3. Cattleman. 22 Minutes. Grades 1-6. EBEC, 1964. Optical Sound. Shows four seasons on a cattle ranch.

4. The Cow. Churchill Films, 1968. 662 N. Robertson Blvd., Los Angeles, CA 90069. K-6. Shows the activities of a cow in the practice of caring for a newborn calf.

5. Dairy Farm Today. 10 Minutes. K-6. Film Fair Communications, 1967. 10900 Ventura Blvd., Studio City, CA 91604. How milk has improved through new methods.

6. Food for America. 6 Minutes. K-6. Vernard Films, Peoria, IL 61654. Return postage.

7. The Dairy Farmer. 17 Minutes. 4-8. Encyclopedia Britannica Education Corporation, 1965. Examines the changing way of life on midwestern dairy farm.

8. Dairy Industry. 3 Minutes. K-6. AV-ED Films. Discusses the dairy industry.

9. Face of the Land. 3 Minutes. K-6. AV-ED Films. Discusses the face of the land.

10. Farm Family in Autumn. 1967. K-3. 14 Minutes. EBEC.

11. Farm Family in Spring. 1968. K-3. 15 Minutes. EBEC.

12. Farm Family in Summer. 1968. K-3. 15 Minutes. EBEC.

13. Farm Family in Winter. 1967. K-3. 15 Minutes. EBEC.

    Takes a farm family through an entire year.

14. Farms in the Seasons-Series. Journal Films, Inc., 930 Pitner, Evanston, IL 60202. 1976.

15. Farms in the Fall, 9 Minutes. K-6.

16. Farms in the Spring. 10 Minutes. K-6.

17. Farms in the Summer. 10 Minutes. K-6.

18. Farms in the Winter. 10 Minutes. K-6.

19. Food - From Farm to You. 15 Minutes. Indiana Farm Bureau, 1972. K-C-A. 130 E. Washington Street, Indianapolis, MD 46204. Modern farming--how we obtain our food.

20. Food for the City - Produce (Carrots). 12 Minutes. K-6. Phoenix/BFA Films and Video.

21. Food for the City - Wheat and Flour. 11 Minutes. K-6 468 Park Avenue, South, New York, NY 10016. Shows how the carrots reach the consumer. Emphasizes the importance of wheat for food.

22. Forests and the Insect Factor. American Film Institute, 1976. 28 Minutes. P-C. 2021 N. Western Avenue, Los Angeles, CA 90027. Live interviews and animation to show insect damage and the use of pesticides.

23. Learning About Fruits We Eat. Coronet Instructional Films, 1970. 65 E. South Water Street, Chicago, IL 60601. 11 Minutes. K-6. Fruit from the tree and vine to the market.

24. Maple Spring. Lucerne Films, Inc., 1979. 14 Minutes. K-6. 37 Ground Pine Road, Morris Plains, NJ 07950. Farm children keep and harvest the sap.

25. Milk - From Farm to You. EBEC, 1972. 3rd Ed. 13 Minutes. K-6 & up. Discusses pasteurization and homogenization and dairy related products.

26. Milk and Milk Foods. Florida Dept. of Commerce Film Library, 1969. Collins Bldg., 107 W. Gaines Street, Tallahassee, FL 32304. 14 Minutes. Shows the many ways milk is used in foods.

27. My World - Earth. Churchill Films, 1974. 11 Minutes. K-6. Points out to children the importance of soil conservation.

28. Our Food. International Film Bureau. 19 Minutes. K-6. 332 S. Michigan Avenue, Chicago, IL 60604. Compares the new with the old ways of processing food.

29. Pioneer Mill. 1972. 12 Minutes. K-6. How an early midwestern farmer grinds corn. Indiana University Audiovisual Center, Bloomington, MD 47405.

30. Plant a Seed. Phoenix/BFA, 1977. 3 Minutes. K-6. Positive effects of window boxes in a city.

33. Sheep, Sheep, Sheep. Churchill Films, 1970. 11 Minutes. P-I. Shows the images of sheep through natural sounds.

34. Those Were the Days. Film Originals, 1972. 22 Minutes. K-P. (America 1910-1950). Shows people picking cotton. P. O. Box 5072, 6536 Robertson Dr., Boise ID 83705.

35. A Visit to a Dairy Farm. Journal Films, Inc., 1983. 12 Minutes. K-6. An introduction to the dairy farm and its processes.

36. A Visit to Apple Cider Country. Journal Films, 1977. P-I. A city boy visits a self-sustaining farm.

37. Visit to a Honey Bee Farm. Journal Films, 1977. P-I. Two children take a tour of a bee farm.

38. Yesterday's Farm. Phoenix/BFA, 1974. K-6. 20 Minutes. Discusses the need to preserve the farm heritage.

COMPUTER PROGRAM:

1. Farm and Food Bytes. Agri-Education, Inc., P. O. Box 56, Stratford, Iowa 50249. Apple Version -- $49.00. IBM Version -- $49.00. Radio Shack Version -- $49.00. This program is an enrichment exercise for language arts, science, math and social studies. The instructor teaches the academic subjects while blending in agricultural learning by the computer program. Also, two (2) games on agriculture: (1) Pioneer Days and (2) Modern Farming.

PUZZLES:

1. Animals. Beginner, 6 pieces. J040012 - no knobs - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702. Ages 3-6.

2. Barn. Beginner, 16 pieces. J061008 - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702.

3. Cow. Beginner, 11 pieces. J506007 - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702.

4. Farm Animals. Beginner, 5 pieces. J040010 - no knobs - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702

5. Leaves. Beginner, 5 pieces. J040020 - no knobs - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702. Ages 3-6.

6. Tree. Beginner, 6 pieces. J506017 - no knobs - $4.95. Brame School Products, P. O. Box 271, Durham, NC 27702.

PAMPHLET:

1. To Grow a Tree. Georgia Pacific, 900 SW 5th Avenue, Portland, OR 97204. 1979. Free. Describes aspects of the commercial forestry industry and lists types of trees and tree products. Elementary and Middle School.

STUDY AND LISTEN CHART:

1. Farm Animals. Eye Gate Media. 10 Charts (22" x 17") 1 cassette. P. $18.00. Stories on cassette accompany the charts. Authentic background material provided on the back of each chart.

WALL CHART:

1. How a Log is Cut Into Lumber. Georgia Pacific, 900 SW 5th Avenue, Portland, OR 97204. Free. (26" x 17 ") Diagrams show basic cuts generally made for soft wood lumber production. el-ms-hs.

SUGGESTED 16mm FILMS FOR THE AGRICULTURE CURRICULUM:

Grades K-6. These films may be obtained from the AV Library, State Department of Education.

1. Bringing Meat to Market. Color. 11 Minutes. Sound. Focuses on the involved route meat travels from feeding station to processing and distribution, stressing the specialized jobs and close scheduling required in the process. Demonstrates how cattle are scientifically fed, weighed, prepared for slaughter, hung in freezers, and inspected prior to packing and shipping to retail outlets. Depicts the modern machinery used to prepare, cut, and package the meat purchased at the supermarket.

2. Children in Summer. Color. 11 Minutes. Sound. Depicts two six-year-old children, Jerry and Jane, spending their summer vacation on their grandfather's farm. Pictures activities such as tending the garden, fishing, feeding the lambs, picking strawberries, and listening to the summer concert made by the buzzing of insects and mosquitoes.

3. The Farm Community. Color. 14 Minutes. Sound. Presents an overview of a modern farm community through the activities of one family.

4. Foods From Grains. Color. 10 Minutes. Sound. Explains the value of bread in daily living. Depicts growing & harvesting of wheat, rye, and corn; mixing, cutting, weighing, and baking of bread.

5. Gardening: An Introduction. Color. 10 Minutes. Sound. Wherever you live it is possible to grow some foods. Shows different kinds of soil and the different needs of the many kinds of plants.

6. Home on the Farm. Color. 16 Minutes. Sound. A vivid and revealing story of children who live on the farm.

7. MacDonald's Farm: Animals Go to School. Color. 11 Minutes. Sound. A tour of MacDonald's Farm shows a chicken trained to ring a bell, a rabbit that rides a scooter, and a pig using a slide.

8. Milk: From Farm to You. (3rd Edit.) Color. 13 Minutes. Sound. Follows the production and processing of milk from cow to creamery to carton and to related dairy products.

9. Organic Gardening: Composting. Color. 10 Minutes. Sound. Explains the role compost plays in natural life processes.

10. Tomatoes: From Seed to Table. Color. 11 Minutes. Sound. Presents the growth of tomatoes from farm to table.

11. A Visit to a Honeybee Farm. Color. 10 Minutes. Sound. A tour of a honeybee farm; observing the bees gathering nectar from the flowers and returning with it to the hive, where it is made into honey and stored in wax cells.

12. A Visit With Farmer Joe. Color. 13 Minutes. Sound. Provides children with an insight into the exciting world of farm animals and farm products.

13. Where Does Our Meat Come From? Color. 10 Minutes. Sound. Follows two children visiting their uncle's feeder farm and in answer to their questions he explains through a series of visits the story of meat, from raising animals to final preparation of meat for the consumer. Pictures the raising of cattle, hogs, and sheep; preparation of livestock for the stockyard; the stockyard; preparing of meat in the packing plant; and the distribution of meat to the consumer.

14. Wonders of Growing Plants. Color. 11 Minutes. Sound. Shows Richard and Stacy learning from Richard's mother how to grow new plants. Uses time lapse photography to show the new plants growing.

The South Carolina Forestry Commission has a number of audio-visual resources that are available for use in kindergarten through sixth grade classes statewide. Because copies are limited and because the programs, in most cases, were not designed to stand alone, we advise teachers to contact one of the seven district offices of the county Forestry Commission office to arrange for a forester or ranger to present a program geared to the interests of the class.

Listed below are programs and literature available through each district office. Following the list of materials is a list of these offices with their addresses and phone numbers.

Slide/tape programs:

Title	Content	Grade
Forest or Tree	How & why a tree grows	3-6
When a Forest Burns	From a child's perspective, the story of a forest fire and how it is controlled	1-6
The Forestry Commission	Various activities of the agency	5-6

Videotapes ($\frac{1}{2}$" VHS):

Fire!	How the Forestry Commission county organization fights forest fires	4-6

Film:

Smokey's Story	About Smokey the Bear	K-4

Literature:

You Can Do It!	Forestry related comprehension activities	2
Miscellaneous fire prevention material		K-6

Training in environmental education:

There is at least one forester in each district who is qualified to put on Project Learning Tree workshops for area teachers.

District Offices:

1. 623 West Dekalb Street, Camden, SC, P. O. Box 457, 29020. Ph: 432-3181
2. 401 West Evans Street, Florence, SC, P. O. Box 1765, 29503. Ph: 669-8685
3. State Road 159, Williamsburg County, P. O. Box 509, Kingstree, SC 29556. Ph: 382-8761
4. 1512 Martin Street, Newberry, SC, P. O. Box 129, 29108. Ph: 276-3823
5. 961 Berry Street, Orangeburg, SC, P. O. Box 1223, 29116. Ph: 534-3543
6. Highway 56 South, Route 4, Box 16, Spartanburg, SC, 29302. Ph: 583-3438
7. 776 N. Jefferies Blvd., P. O. Box 298, Walterboro, SC, 29488. Ph: 549-5451

Columbia Office:
5500 Broad River Road, P. O. Box 21707, Columbia, SC 29221. Ph: 758-6900

RESOURCE MATERIAL FOR AGRICULTURE COURSES

Ahlberg, Allan. Mr. Buzz the Beeman. Western/Golden, 1983. Grades 1-3.

Simple but effective story about a wacky family.

Azarian, Mary. A Farmer's Alphabet. D. R. Godine, 1981. Grades 1-3.

An alphabet book of objects associated with New England farm life.

Barton, Byron. Buzz, Buzz, Buzz. Penguin, 1979.

A bee buzzes around among farm animals until he stings the bull and starts an upsetting reaction among all the other barnyard animals. Finally, the bee is chased away by a bird.

Battaglia, Aurelius. A Farm. New York: Platt and Munk, 1978. Grades 1-3.

Life on a farm where animals are raised and vegetables, fruits and corn are grown.

*Beck, Barbara. The First Book of Fruits. Watts, 1967. Grades 4-6.

Behrens, June. Colonial Farm. Children's Press, 1976.

Social life and custom on a Virginia farm in colonial days.

Benson, Christopher. Careers in Agriculture. Minneapolis Lerner Publishing Company, 1974.

A brief description of agricultural-related careers.

Bond, Felicia. Christmas in the Chicken Coop. Crowell, 1983. Grades K-3.

Two little chickens find a tree for the hen's Christmas.

Booth, Eugene. On the Farm. Milwaukee, Raintree Children's Books, 1977.

Descriptive scenes of farm life.

Bozzo, Mazine Zohn. Toby in the Country. Toby in the City. Greenwillow, 1982. Grades K-1.

A comparison of town and country life.

*Brown, Margaret Wise. Big Red Barn. Albert Whitman, 1956. Grades K-1.

Brown, Margaret Wise. Country Noisy Book. Harper-Row, 1976. Grades K-1.

Muffin, the dog, visits the country and hears all of the country noises.

Brown, Margaret Wise. Little Chicken. Harper, (1982c 1943). Grades K-1.

Some animals will play with Little Chicken but some won't.

*Brown, Myra. Company's Coming for Dinner.

Bunting, Eve. The Big Red Barn. Harcourt Brace Jovanovich, 1979. Grades K-3. A Let Me Read Book.

"A youngster's sense of security is threatened by the arrival of a stepmother and the destruction of the old red barn on her family's farm."

*Burch, Robert. Doodle and the Go-Cart. Illustrated by Alan Tiegreen. Viking Press, 1972.

Burcham, Nancy. Country Girl. Des Moines, Wallace-Hemestead Book Company, 1977.

Autobiography of the author, who grew up on an Illinois farm.

Byars, Betsy. The Midnight Fox. Illustrated by Ann Grifalconi. Viking Press, 1968. Grades 3-7.

Ten year old Tom spends the summer on his uncle's farm, where he sees the black fox.

*Carle, Eric. The Very Hungry Caterpillar. Collins-World, 1970.

The caterpillar eats through the pages of a book leaving many holes and finally emerges as a beautiful butterfly on the last page.

Chwast, Seymour. Tall City, Wide Country: A Book to Read Forward and Backward. Viking, 1983. Grades K-1.

Contrasting artistic patterns in the city and in the country.

Climo, Linder. Chester's Barn. Tundra, 1982. Grades 3-5.

Animals seek shelter from the winter in an old fashioned barn on Prince Edward Island.

*Clymer, Eleanor. Me and the Eggman. Illustrated by David K. Stone. Dutton, 1972. Grades 3-6.

The story of a boy who runs away from responsibilities at home and becomes involved in greater ones with an old, lonely farmer.

Cobb, Vicki. Science Experiments You Can Eat. Philadelphia: Lippincott Co., 1972.

Grades 4-6. Experiments with food demonstrate various scientific principles.

*Curry, Nancy. An Apple is Red. Bowman, 1967. Grades K-3.

Curtis, Samuel M., et. al. Exploring Occupations in Agribusiness and Natural Resources. Gregg Division, McGraw-Hill, 1975.

Various careers in agriculture and related fields and the training needed for each.

Demuth, Patricia. Joel; Growing Up A Farm Man. Dodd Mead, 1982. Grades 4-6.

A thirteen year old boy works on his family's farm and prepares to manage his own some day.

Di Fiori, Lawrence. The Farm. Macmillan, 1983. (Strawberry Block Book). Grades K-1.

Pictures the usual barnyard lineup of animals and the hardware (tractor, plow and haywagon).

Distad, Audree. Come to the Fair. Harper and Row, 1977. Grades 3-7.

Several children participate in the exhibits of the South Dakota State Fair.

Dunn, Phoebe and Judy Dunn. The Animals of Buttercup Farm. Random House, 1981. Grades K-2.

A typical day for the animals of Buttercup Farm.

Dunn, Phoebe. Farm Animals. Random, 1984. Grades K-1.

An introduction to farm animals.

Engstrom, Paul H. Pollution, the Food We Eat. Minneapolis, Lerner Publishing Company, 1974.

Discusses the additives used in foods, contamination of food and the use of agricultural chemicals.

Fenton, Carroll and Hermine B. Kitchen. Plants We Live On: the Story of Grains and Vegetables. Harper-Row, 1971. Grades 3-6.

How food plants have enabled mankind to progress and continue to feed the population.

Fleischman, Sid. McBroom Tells the Truth. W.W. Norton, 1966. Grades 3-7.

The hilarious story of Mr. McBroom's successful farm.

Franchere, Ruth. Cesar Chavez. Crowell, 1970. Grades 2-6.

Biography of the Mexican American leader of the U.S. farm laborers.

Galdone, Paul. The Little Red Hen. Houghton Mifflin, 1973. Grades K-2.

The Little Red Hen bakes a cake without the help of her lazy friends.

Gammel, Stephen. Once Upon McDonalds's Farm. Four Winds Press, 1981. Grades K-3.

"McDonald tries farming with circus animals, but has better luck with his neighbor's cow, horse and chicken".

Geisel, Theodor Seuss. Ten Apples Up on Top. Beginner, 1961. Grades K-1.

Funny pictures illustrate number concepts.

Ginsburg, Mirra. Across the Stream. Greenwillow, 1982. Grades 2-4.

Action story of a duck and her three ducklings who befriend a hen and her three little chickens.

*Greene, Carla. I Want to be a Dairy Farmer. Children's Press, 1957. Grades K-3.

Provides information about the requirements and qualifications for being a dairy farmer.

Greene, Carol. Hinny Winny Bunco. Harper & Row. 1982. Grades K-3.

A farmer, Hinny Winny Bunco, overworked by his crabby brother is miserable until he discovers his musical talents when he is given a fiddle by a strange old man.

Gustafson, A. The Case of the Purloined Pork. Des Moines, Iowa: The National Pork Council Women, 1985.

Hall, Donald. The Ox-cart Man. Viking, 1979. Grades K-3.

Farming and marketing in New England years ago.

Hamilton, Virginia. Willie Bea and the Times the Martians Landed. Greenwillow, 1983. Grades 5-9.

Story of a Black girl growing up on a farm in the 30's.

Hanmer, Trudy J. Water Resources. New York: Franklin Watts, 1985. Grades 5-6.

Explains the water cycle, major sources, and problems concerning water.

Hawkes, Nigel. Food and Farming (energy). Watts, 1982.

A discussion of the energy expenditure in crop and animal production and whether the results are justified.

Heine, Helme. The Most Wonderful Egg in the World. Atheneum, 1983. Grades K-3.

Three quarrelling hens vie with one another in egg production.

Heller, Ruth. The Reason for a Flower. New York: Grosset and Dunlap, 1983. Grades K-3.

A beautifully illustrated explanation of a flower's purpose (producing seeds).

Helweg, Hans. Farm Animals. Random House, 1980.

Describes the usefulness of common-found farm animals.

Holmes, Efner Tudor. Amy's Goose. Illustrated by Tashor Tudor. Harper-Row, 1977. Grades 1-3.

Amy, a farm girl, nurses a wild goose back to health and struggles with the decision to let it go free again.

Houlehen, Robert J. Jobs in Agribusiness. Lothrop, Lee, and Shephard Company, 1974. Grades 5-up.

An introduction to a wide range of job possibilities in the field of agriculture.

Ingle, Annie. The Big Farm Book. Platt and Munk, 1976. Grades K-2.

Around the year with farm activities.

Ipcar, Dahlov Zorach. Hard Scrabble Harvest. Doubleday, 1976. Grades K-3.

Relates in rhyme the farmer's struggle against the odds from spring planting to fall harvest and Thanksgiving dinner.

*Jackson, Louise A. Grandpa Had a Windmill. Grandma Had a Churn. Parents' Magazine Press, 1977. Grades 2-4.

Interesting and simple explanations of how butter is churned, what a whetstone does, how a windmill operates, etc.

Jordan, Helene J. How a Seed Grows. Harper-Row, 1960. Grades K-3.

Step-by-step growth of a seed.

Krauss, Ruth. Carrot Seed. Harper-Row, 1945. Grades K-3.

A little boy's faith in a carrot seed is rewarded.

Kushner, Jill Menkes. The Farming Industry. Franklin Watts, 1984. Grades 4-up.

An introduction to the agricultural industry and problems in food production.

Kwitz, Mary DeBall. Little Chick's Breakfast. Harper-Row, 1983. Grades K-3.

The story of a little chicken who becomes hungrier and hungrier as she watches the other barnyard animals getting their breakfast before she gets hers.

Lavine, Sigmund A. and Scuro, Vincent. Wonders of Mules. Dodd, 1982. Grades 4-6.

Types of mules and how they are bred.

Lloyd, Megan. Chicken Tricks. Harper & Row, 1983. Grades K-2.

A farmer's chickens play tricks on him by sneaking seasonal substitutes into the egg cartons.

Lobel, Arnold. The Book of Pigericks: Pig Limericks. Harper, 1983. Grades 2-4.

Thirty-eight limericks about pigs in all types of predicaments.

Lunn, Janet Louise Swoboda. The Root Cellar. Scriber, 1983. Grades 5-8.

Historical fiction about the American Civil War. The setting is a Canadian farmhouse.

McClosky, Robert. Blueberries for Sal. Viking Press, 1948. Grades K-1.

Sal and the bears have a mixed up day gathering blueberries.

McMillan, Bruce. Here a Chick, There a Chick. Lothrop, Lee and Shepard Books, 1983. Grades K-1.

Baby chicks are used to illustrate opposite concepts as inside, outside, asleep/awake, etc.

Mandry, Kathy. How to Grow a Jelly Glass Farm. Pantheon Books, 1974. Grades K-3.

How to have a windowsill garden with leftovers from foods.

Marston, Hope Irvin. Machines on the Farm. Dodd, 1982. Grades 2-5.

How each farm machine is used in the production of food.

Miller, Jane. Farm Counting Book. Prentice-Hall, 1983. Grades K-1.

Basic logic and problem solving with the questions involving farm animals.

Naylor, Phyllis Reynolds. Night Cry. Atheneum, 1984. Grades 4-6.

Life in the backwoods hill country of Mississippi.

Olsen, Violet. The Growing Season. Atheneum, 1982. Grades 5-7.

A girl's growing up years on an Iowa farm during the Depression.

Patent, Dorothy Hinshaw. A Picture Book of Cows. Holiday, 1982. Grades 1-3.

Basic information about cows.

Patterson, Geoffrey. The Story of Hay. Dutton, 1983. Grades 3-5.

Informative introduction to a farm staple.

Paulsen, Gary. Farm: A History and Celebration of the American Farmer. Prentice Hall, 1977.

Peck, Robert Newton. Soup's Goat. Knopf, 1984. Grades 4-6.

Rob and his friend Soup build goat carts and select animals for the race. (country life in Vermont)

Pellowski, Anne. First Farm in the Valley: Anna's Story. Philomel, 1982. Grades 3-5.

Life and times of an immigrant farm family in Wisconsin in the 1870's.

Provensen, Alice and Martin Provensen. A Horse and a Hound, A Goat and a Gander. Atheneum, 1980. Grades K-1.

The eccentric behavior of four farm animals.

Radin, Ruth Yaffe. A Winter Place. Atlantic Montly, 1982. Grades K-2.

A family skates on a farm pond in winter.

Roth, Charles E. The Farm Book. Harper and Row, 1975. Grades 4-up.

An introduction to the science of farming.

Rudstrom, Lennart and Carl Larrson. A Farm. Putnam, 1976. Grades 3-5.

Farm life in Sweden years ago.

Rylant, Cynthia. This Year's Garden. Illustrated by Mary Szilagyi. Bradbury Press, 1984. Grades K-3.

"Follows the seasons of the year as reflected in the growth, life and death of the garden of a large rural family."

Scarry, Richard. On the Farm. Golden Press, 1976. Grades K-3.

Farm activities throughout the year.

Selsam, Millicent E. Cotton. Morrow, 1982. Grades K-3.

The history of cotton, where it is grown, the plant's growth and maturation, and how cotton is processed into fabric.

Selsam, Millicent E. Eat the Fruit, Plant the Seed. Morrow, 1980. Grades K-3.

A guide to planting and cultivating six kinds of fruit seeds.

Selsam, Millicent E. More Potatoes! Harper and Row, 1972. Grades K-2.

How the potato gets from the farmer's field to the dinner table.

Sheffer, H.R. Tractors, edited by Howard Schroeder (Movin' On). Crestwood House, 1983. Grades 4-5.

Includes the types of tractors and highway equipment.

Smith, E. Boyd. The Farm Book. Houghton, 1982. Grades 2-4.

Farm life in America at the turn of the century.

Snoopy's Facts and Fun Book about Farms: Based on Charles M. Schulz Characters. Random House, 1980.

All the aspects of farm life including the farmers.

Stone, Ericka and Good, Merle. Nicole Visits an Amish Farm. Walker, 1982. Grades 3-5.

A Black city child spends a summer vacation with an Amish farm family in Pennsylvania.

Swayne, Dick. I am a Farmer. Harper-Row, 1978. Grades 1-3.

What life is like on a farm.

Tafuri, Nancy. Early Morning in the Barn. Greenwillow, 1981. Grades K-1.

Sun-up on the farm and the sounds the animals make.

Vaes, Alain. The Porcelain Pepper Pot. Little, Brown, 1982. Grades K-1.

A city pepper pot is lost at a country picnic and sets out to find a farmhouse.

Van Leeuwen, Jean. Amanda Pig and Her Big Brother Oliver. Dial, 1982. Grades K-1.

Amanda discovers that, although it is fun to play with Oliver, she must be her own person.

Watson, Clyde. Applebet, an ABC. Farrar, Straus and Giroux, 1982. Grades K-3.

An apple farmer and her daughter go to the country fair.

Wildsmith, Brian. Daisy. Pantheon, 1984. Grades 4-6.

Daisy, the cow, wearies of the excitement of Hollywood and longs for the farm.

Wright, Dare. Look at a Calf. Random House, 1974. Grades K-3.

A description of dairy cows and the dairy farming industry.

Wykeham, Nicholas. Farm Machines. Milwaukee, Raintree Children's Books, 1979. Grades 2-4.

Describes farm machines and their uses.

* Indicates out-of-print titles which may be in the school's media center.

Audiovisual and Resource Materials Lists prepared by Margaret W. Ehrhardt and Mary Frances Griffin, Library/Media Consultants, South Carolina State Department of Education.

STATE RESOURCE AGENCIES/ASSOCIATIONS

State Department of Agriculture
Wade Hampton Office Building
P. O. Box 11280
Columbia, S. C. 29211
(803) 758-3531

Farm Bureau
Blanche Weathers
Ag in the Classroom
S. C. Farm Bureau
P. O. Box 754
Columbia, S. C. 29202
(803) 796-6700

(S. C.) Land Resources Commission
2221 Devine Street, Suite 222
Columbia, S. C. 29205
(803) 758-2823

S. C. National Resources
Education Council
Sources of National Resource and Environmental Information in South Carolina
The Governor's Division of
Natural Resources and
The Environment
Suite 306
1205 Pendleton Street
Columbia, South Carolina 29201

James M. Waddell, Jr.
Mariculture Research and
Development Center
P. O. Box 809
Bluffton, S. C. 29910
(803) 757-3795

Wildlife and Marine Resources Department
P. O. Box 167
Columbia, S. C. 29202
(803) 758-0001

Cooperative Extension Service
United States Department
of Agriculture
Clemson University
Clemson, S. C. 29631
(A local agent is available
in every county. 4-H publications
are available.)

(State) Forestry Commission
5500 Broad River Road
P. O. Box 21707
Columbia, S. C. 29221
(803) 748-6900

Market Bulletin
S. C. Market Bulletin
P. O. Box 11280
Columbia, S. C. 29211

State Department of Parks,
Recreation, and Tourism
1205 Pendleton Street
Suite 110, Edgar A. Brown Building
Columbia, S. C. 29201
(803) 758-2566

(State) Water Resources Commission
3830 Forest Drive
P. O. Box 440
Columbia, S. C. 29240
(803) 758-2514

The Clemson University Cooperative Extension Service has many resource personnel and materials available on agriculture (including 4-H). Every county has an Extension Service Agent listed in the phone book.

The **State Department of Education** has several resources which might be useful:

1. Exploring New Horizons, prepared by Judy B. Starnes. Available from Lynne Hufziger, State Career Education Coordinator, 912-E Rutledge Building, Columbia, South Carolina 29201, (803) 758-3241.
2. Ground to Grits, Nutrition/Agriculture Curriculum Guide, developed by Peggy W. Cain. Available from Peggy Cain, State Science Consultant 801 Rutledge Building, Columbia, South Carolina 29201, (803) 758-2652.

NATIONAL RESOURCE AGENCIES/ASSOCIATIONS

Agriculture in the Classroom
United States Department of Agriculture
Room 227-W
Washington, D. C. 20250
202-447-5727
Director: Shirley Traxler

The USDA serves as a focal point for Ag in the Classroom. Various information is available from the agency, such as the comprehensive booklet Resource Guide to Educational Materials About Agriculture, April 1983.

For example, two programs available (free) are:

Visiting People on a Dairy Farm (grades K-3; grades 4-6)

Booklets and a teacher's guide are available from:

Special Programs Center, OGPA
Room 535-A
USDA
Independence Avenue & 14th Street
Washington, D. C. 20250

The Great American Farm (grades 4-6)

An activity program on farm production & farm costs is available from:

Great American Farm
Box 385
Vandalia, Ohio 45377

Materials are available from many other sources.
Several of these organizations are:

Public Relations Office
Cotton, Inc.
1370 Avenue of Americas
New York, New York 10019
(212) 586-1070

National Cotton Council of America
P. O. Box 12285
Memphis, Tennessee 38112
(901) 274-9030

"The Story of Cotton" teaching kit is available for $8.00 (includes 30 booklets, filmstrip, cotton samples, wallchart, teacher's guide).

National Dairy Council
6300 North River Road
Rosemont, Illinois 60018-4233

Education Department
National Live Stock and Meat Board
444 N. Michigan Avenue
Chicago, Illinois 60611
(312) 467-5520

National Peanut Council
1000 Sixteenth Street, N. W.
Suite 700
Washington, D. C. 20036

Soil Conservation Society of America
7515 N. E. Ankeny Road
Ankeny, IA 50021-9764
(515) 289-2331

Educational cartoon booklets are available.

John Bankhead
Public Affairs Manager
The Tobacco Institute
Columbia Building, Suite 160
2601 Flowers Road South
Atlanta, Georgia 30341
(404) 455-6357

(booklets on the history of tobacco production for teacher reference)

Reprinted From

AGRICULTURE TODAY
by Clay Napier
U. S. Department of Agriculture

THE WEEK WE ALMOST LOST OUR CHRISTMAS

When I was a barefooted boy on a mountain slope, I heard a tale about some meanies who stole Christmas. I wondered how they did it. Since then I have withdrawn the question, for I have learned that a story does not have to be factual to tell the truth.

In that spirit, we dedicate this story to the people who volunteer their time to help with the Ag in the Classroom effort of USDA, state and local groups:

It happened a week before Christmas Eve.

Videotapes sent the sights and sounds of sleighbells in the snow echoing through the city. Like other boys and girls, Paul Lavere was being as good as he could be, for Santa Claus was coming to town.

Not since his seventh birthday last May 4, had Paul been so happy. It was hard to stand still. His body was weary from the day's play, but his spirit made his legs want to run off in all directions at the same time. Where did Santa hide the toys?

Mom and Dad had been making a lot of trips to the attic. What's up there? It's enough to send a kid up the wall, bone tired or not. Paul said no to temptation as best he could. Finally, it was too much. Quietly, he eased up the stairway. He hoped Santa would forgive him on grounds he was being as good as possible.

The attic was dark. Amid the season of joy, Paul could not believe his ears. He heard voices, weird, warped and cold. He want to flee, but fright held him still.

In the attic, dead witches and warlocks were meeting. A ghastly plot was hatching. The evil spirits had come back from the dead in the form of creatures that looked like half spider and half snake. In an eery circle, they slithered, shaking their slimy, arrow-like tails and chanting odes of gory to the world.

"Christmas! Bah! Humbug!" screeched the bad ones. "Forget all those years we tried to kill it. At last, we'll win. We'll steal agriculture. Then we'll see silly mortals starve! Ha! Ha! Ha! Ha! He! He!

Although Paul was a city dweller and a very young one at that, he knew the theft of agriculture could deal Christmas a terrible blow. He had learned about agriculture in the "Ag in the Classroom" programs at his school.

If agriculture were stolen, what would Christmas be like?

There would be no Christmas trees... no stockings, much less candies, oranges and other goodies to fill them... no logs for the fire... chestnuts... none of the familiar smells of fresh cranberry and holly and the stuffed turkey roasting in the oven... no gift wraps or bows... no wool sweaters... no cotton jeans... no leather boots... no pigskin for Dad's superbowl game... Santa couldn't come to town. His reindeer would have starved.

Even worse, without agriculture, not many people would have anything to eat, let alone toys and games and parties. Most would starve.

No more tall buildings or even ordinary houses would be built, and those in existence would gradually crumble. The simple search for food would keep everyone busy every waking hour, and they still wouldn't find enough. There wouldn't be time to build civilization. Nor to dream it.

Soon, there would be no pets. All would be eaten. To survive, people would wage total war over a few crumbs or an apple peel in a garbage can. Winners would be rare, and perhaps the least lucky. If these demons steal agriculture, Paul figured, the lights of Christmas will be snuffed out. So will most human life.

Beads of cold sweat popped out on Paul's face when the creatures cried in unison, "First, We'll kill all of the grass. Armies of insects friendly to our side will help. We'll strike at once. Eat all the grass. And the seeds. The rest will be as easy. They can't make it without blades of grass. Ha! Ha! Ha! He! He! He!"

Technically, the demons were on to something, and Paul knew it. Without grass, erosion would carry the topsoil away. Besides, can you imagine a world without such crops as wheat, corn, rice and barley --all grasses? There would be no bread. No meat. No cakes. No ice cream. No cheese. No milk. Not much of anything to eat.

Down the stairs Paul ran to his skateboard. He zipped up and down the streets screaming, "THEY'RE STEALING AGRICULTURE!"

Almost everyone was enjoying Yuletide season parties. They laughed at Paul and his wild ride, thinking it was part of the festivities.

Paul felt he had to do something. The stakes were so high he had nothing to lose. He headed back to the attic. Maybe he could stop the demons. Nobody would listen. He'd have to fight alone.

Going back up the stairs was tough. Paul's hands trembled on the rail. Just as he reached the top, Paul awoke.

"I just fell asleep! I was only dreaming!" Paul shouted as he ran out of the house. At that moment, Mom and Dad returned from Yule shopping. They laughed, thinking Paul was just a bit daffy over Christmas.

Daffy or not, Mom and Dad loved the very special music in Paul's voice when he sang, "MERRY CHRISTMAS TO ALL!"